MARCH 19, 1960
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Telephony®

THE JOURNAL OF THE TELEPHONE INDUSTRY

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Guaranteed Circulation This Issue
13,489 of Which 12,935 Is Paid

OLYMPIAN CHALLENGE

Two Pacific Telephone & Telegraph Co. employes overlooking Squaw Valley. Among many who "made Olympics go" are Jean Reed, a staff assistant telephoning; and Jim Tarter, chief communications coordinator for giant Games.

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A DIVISION OF **GENERAL DYNAMICS**

FLASHES AND PLUGS

A PARTY LINE IS A PARTY LINE. TELEPHONY thanks *The Midget*, a publication of the Suttle Equipment Corp., Lawrenceville, Ill., for this party-line story:

"I'll tell you, Sarah, that Agnes should be taken off our party line."

"What's she done to you, Millie?"

"Why, yesterday she interrupted my conversation six times in two hours."

•

SUGGESTION PRONE. A man walked into a Detroit, Mich. bakery and told two women clerks: "Give me the money or I'll shoot."

One of the clerks, a 68-year-old, quickly regaining poise, said, "Only the small change is left."

Her fellow clerk, 59, suggested, "Why don't you go next door to the meat market? They have a lot more money."

The man did just that. Meanwhile, the women called the police who arrested the bandit as he came out of the meat market with $79.70 in loot.

•

INTERFERENCE. All was in readiness recently for a 4000-mile marriage-by-telephone.

The prospective bridegroom, a sailor, was on the telephone in Cadiz, Spain, where he is stationed.

The pretty, young bride-to-be and Washington, D. C., Municipal Court Judge Edward A. Beard were on the other end of the transatlantic line. The long-distance wedding had been arranged two weeks earlier.

"I'm the officiating judge," Judge Beard said into the telephone. "Are you ready to go ahead with the ceremony?"

"No," replied the sailor.

"No?" asked the judge.

"No," repeated the sailor. He promised to write a long, long letter explaining everything.

•

ENTERTAINMENT BY TELEPHONY. Predating the use of lines for the transmittal of radio and television, subscribers of the Rye (Colo.) Telephone Co. back in 1907 had to be restrained from sending music over the telephone wires.

R. R. MacCormack, manager of the company, calls attention to Rule No. 5 in the company's original constitution and bylaws which read, "No music over the lines."

It seems that in those days, the neighborhood fiddler would get all the nearby residents on the telephone and stage a lengthy one-man "old fiddler's contest" for their entertainment. This worked a hardship on those who needed to use the telephone for an emergency call or other purpose.

CHANGE OF ADDRESS

Please notify your local postmaster and the Circulation Department of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

March 19, 1960

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H. D. FARGO JR., *President and Director of Advertising* • A. J. STULTS, *Vice President and Advertising Manager* • R. C. RENO, *Vice President and Editor* • DAN S. FARGO, *Vice President and Managing Editor* • DIANNE P. DRUCKER, *Associate Editor* • HELEN HARDIN, *Associate Editor* • FRANCIS X. WELCH, *Washington Editor* • RAY BLAIN, *Technical Editorial Director* • MAYME WORKMAN, *Traffic Editor* • VIVIAN RYDEN, *Circulation Manager*.

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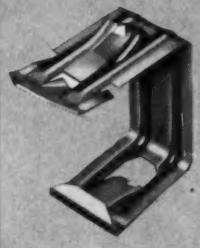

Used for suspending 1½ inch channel from ¼ inch rod, ⅜ inch rod, and #8 wire. Provides instant, accurate alignment prior to channel installation. Designed to accommodate channel with a ½ inch to ⅝ inch flange width. No tools required.

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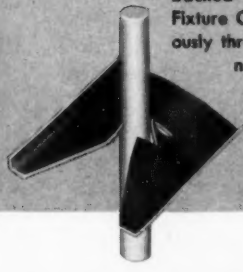

For use on rod to firmly position lighting fixtures, etc. May be backed up with second GAT Fixture Clip (or if rod is previously threaded with nut). Eliminates need for threading rod and is fastest method in finalizing fixture height. Available for ¼ inch rod only. No tools required.

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HERE'S HOW ANACONDA DIRECT BURIAL WIRE & CABLE MAY SAVE YOU MONEY

New advances in insulation and jacket materials, termination equipment and plowing techniques now, make Direct Burial Wire and Cable Systems more economical in many areas.

Telephone wire and cable plants are now being buried directly in the earth.

That's where Samuel Morse attempted to place the first commercial line in 1843. He designed a direct burial, fully color-coded cable for America's first telegraph line between Washington and Baltimore, but his insulation proved defective and Morse was forced to take the conductors out of the cable, separate them and string them on poles with crossarms.

Now, the four freedoms of buried plants – (1) freedom from storm damage, (2) freedom from tree clearing and retrimming expenses, (3) freedom from the safety hazards associated with power contacts and pole climbing, and (4) freedom from right-of-way procurement difficulties – can be yours at actual savings in cost.

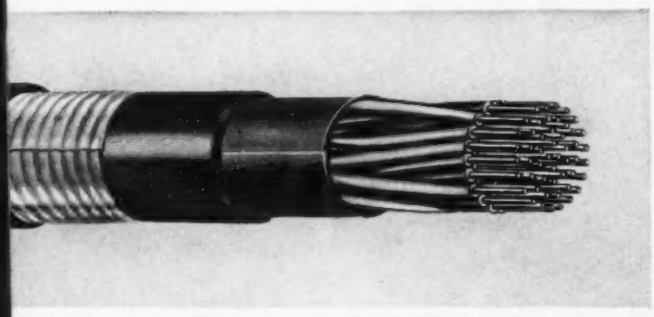
Anaconda's high-molecular weight polyethylene insulation – tough and resistant to many direct burial hazards – is part of the reason. The use of this rugged, crack-resistant material, together with new terminals and new plowing developments, have overcome most of the problems that formerly stood in the way of economical direct burial applications. Now in selected areas, a direct burial system may cost you less – in initial installation and in maintenance – than an aerial plant!

On the following pages, you will find pertinent questions and answers that show why and how Anaconda direct burial wire and cable may make possible important savings. Read these pages. Then give careful consideration to direct burial wire and cable for *your* telephone system.

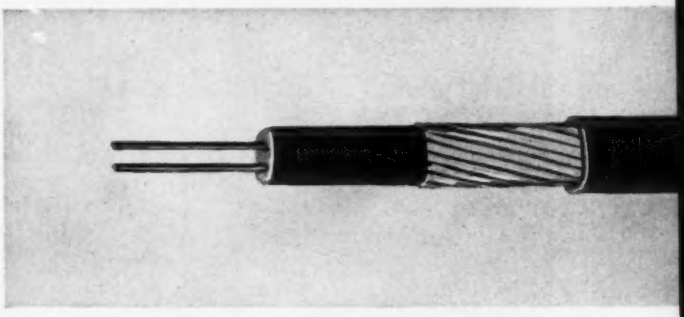
THE INSIDE FACTS ON

THE CONSTRUCTION OF ANACONDA DIRECT BURIAL TELEPHONE WIRE AND CABLE

See for yourself why Anaconda Direct Burial Telephone Cable resists underground hazards . . . gives long life and dependable service



TYPE PCP AND PCPG



TYPE BW

DIRECT BURIAL CABLE:

Cable Core: Conductors insulated with high-molecular weight color-coded polyethylene provide excellent electrical properties with great mechanical toughness and crushing resistance.

Inner Jacket: This inner jacket consists of high-dielectric strength polyethylene. It provides a second line of defense against moisture penetration in the event that the outer jacket is damaged. It also provides a high-dielectric strength barrier against lightning impulse breakdowns between the pairs and the shield.

Shield: The PCP type has 5 mils of longitudinally applied *copper* tape, rather than aluminum tape used in aerial cable. The copper provides a corrosion-resistant, low-resistance shield. This shield, coupled with the high-dielectric strength of the inner jacket, makes the over-all cable highly resistant to lightning damage. The copper shield also provides mechanical protection against the attacks of termites and rodents.

In areas where gophers are known to exist, additional protection against attacks by these rodents has been found necessary. For this purpose, the copper shield thickness has been increased from 5 mils to 10 mils and cables with this shield thickness are designated PCPG.

Outer Jacket: High-molecular weight polyethylene, highly resistant to abrasion, weathering, moisture, fungus, corrosion and environmental cracking.

DIRECT BURIAL WIRE:

Insulation: Conductors insulated in parallel with black high-molecular weight polyethylene. The insulated core has a rounded oval shape to facilitate tight fit of the steel armor wires – thus minimizing capacitance unbalance to ground.

Shield: A helical serving of closely spaced flat steel wires for mechanical protection against attacks of termites and rodents. The shield wires are flooded with an asphaltic base compound to resist corrosion. The shield, coupled with the very high-dielectric strength of the core, provides excellent resistance to lightning damage. The helical method of application of the shield wires also results in their contributing substantially to the tensile strength of the wire (over 400 pounds) which is needed to withstand stresses in installation and operation.

Outer Jacket: A tough, flexible thermoplastic jacket provides added mechanical protection for ease of installation and longevity of operation. 60243

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For complete information on Exide stationary batteries, write for new illustrated brochure. Exide Industrial Division, The Electric Storage Battery Company, Philadelphia 20, Pa.

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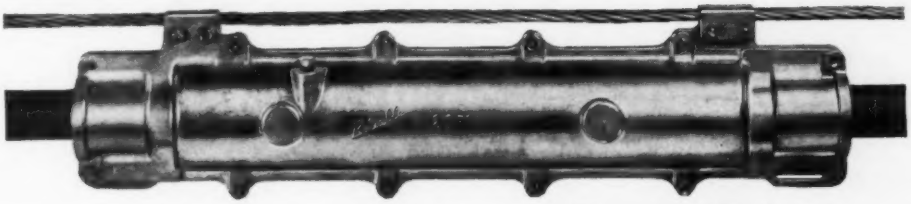
splice cases



For use with lead, Alpeth and Stalpeth sheathed cables up to 1.6" diameter.

and

splice case terminals

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Two terminals, back to back — 12, 17, 22, 27 and 32 pair.
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City _____ *Zone* _____ *State* _____

AE-Lenkurt

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AE-Lenkurt *telephone* engineers stand ready to relieve you of all your expansion problems. By dealing with an experienced *team*, you're assured of having things done *the right way* from start to finish.

What's more, you can count on impartial recommendations—because we handle a *complete* line of communications equipment, and have no reason to "push" any one system.

Lenkurt equipment lets you *add as you grow*, the "building-block" way, with the full assurance that what you install today won't be outdated tomorrow.

In addition, AE will serve as your headquarters for all telephone supplies—from cable and exchange equipment to fully integrated communication "packages."

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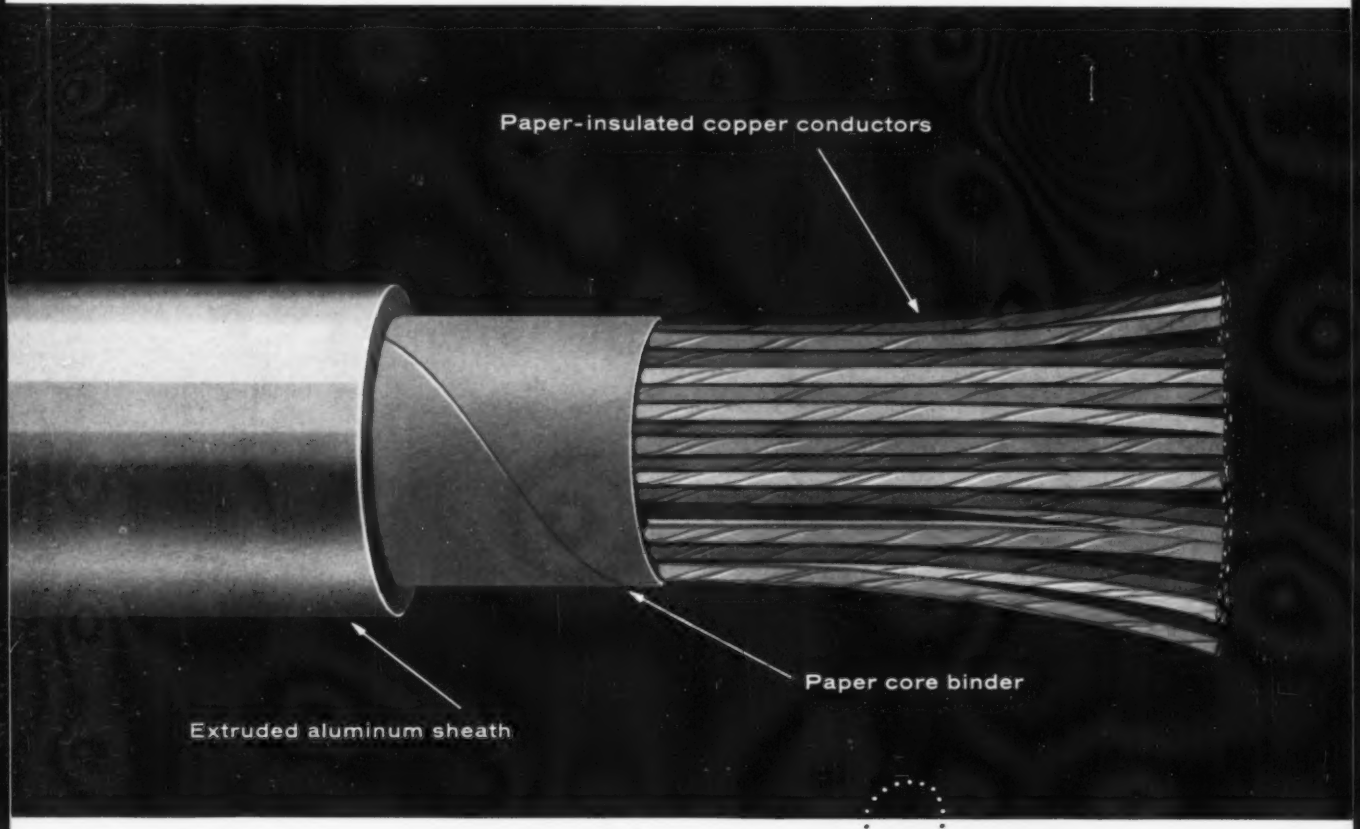
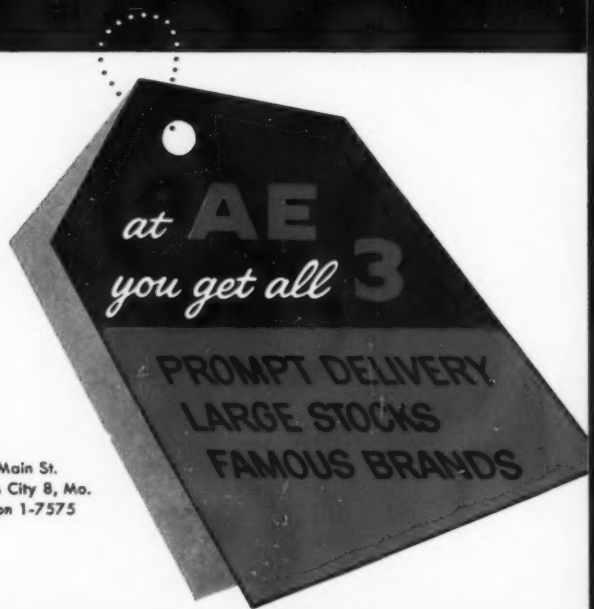
ALUM





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INUM

Now You Can Buy General Cable's NEW ALUMINUM SHEATH CABLE from AE

LIGHTWEIGHT! Aluminum's high strength allows reduced sheath thicknesses. This gives you lighter weight per foot. Aluminum cable is about the same weight as Alpeth and Stalpeth cables.

UNUSUALLY STRONG! Aluminum permits higher than usual pulling stresses during installation. Its great strength and light weight allows greater spacing of blocks during aerial installation. Aluminum sheath cable handles with little bending or kinking.

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HIGH VIBRATION RESISTANCE! Aluminum gives high resistance to vibration fatigue. This is ideal for aerial installations, especially when supported by structures that transmit vibration.

Extruded aluminum sheath telephone cable is available from AE in a wide range of constructions. For installations in seacoast locations or in industrial atmospheres, a special polyethylene jacket can be supplied for protection against corrosion. Order from your AE sales representative. And remember—At AE, you get all 3!

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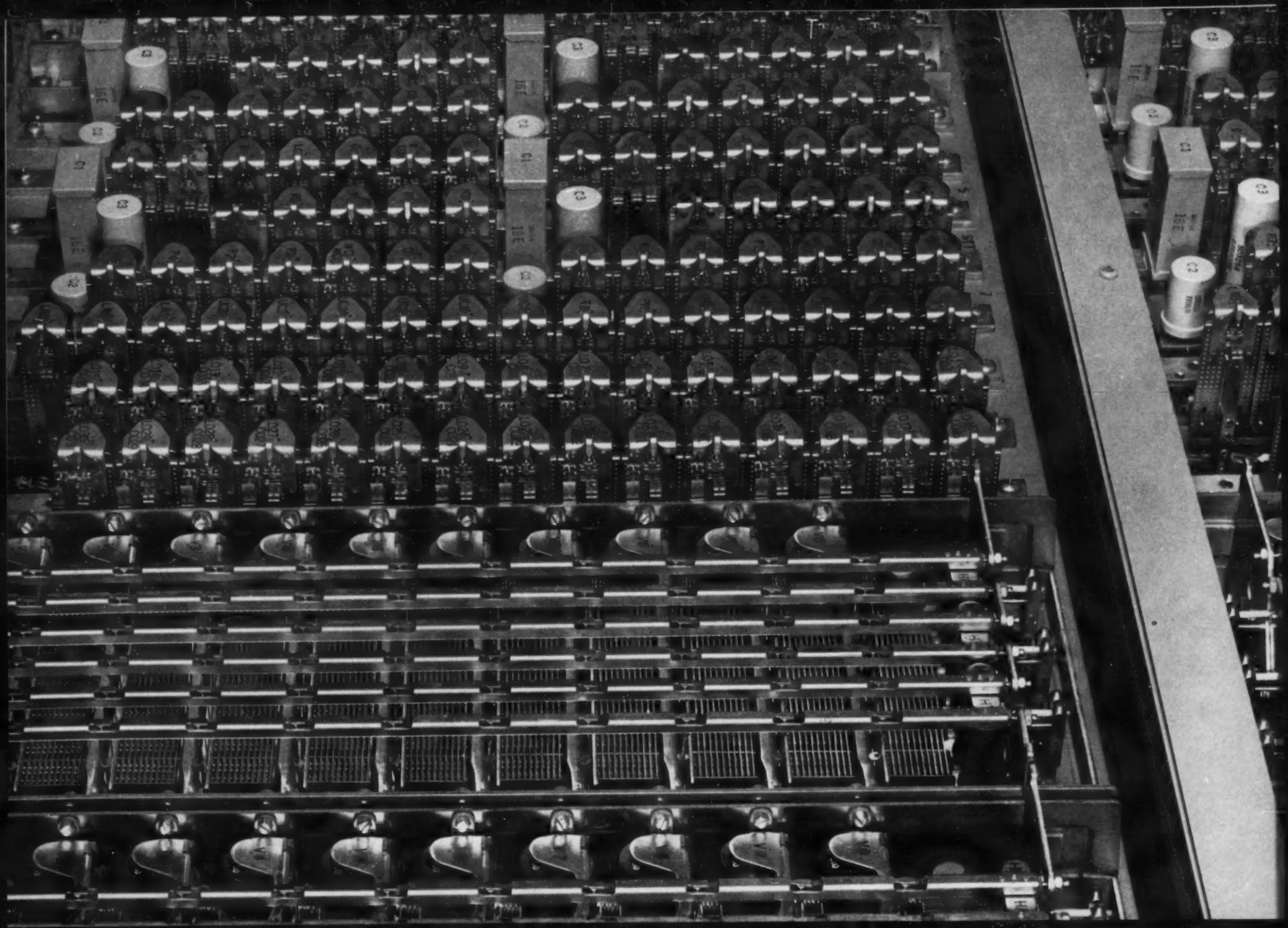
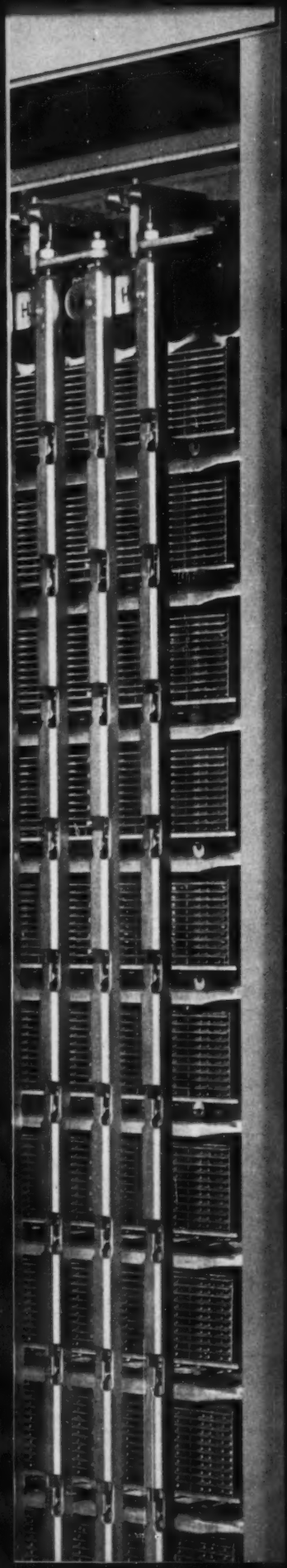
GENERAL SYSTEM





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FOR EXCHANGES AS SMALL AS THIRTY LINES!

with North NX-2 switchboards

Standardization of component modules, inherent in the application of a modular concept, has enabled North to bring to even the smallest exchanges the efficiencies and economies of crossbar switching, heretofore available only to large exchanges.

This modular concept, using a "building block" approach, makes it possible to literally "build" a switchboard, in multiples of 30 lines, to exactly meet your switching requirements. Tremendous economies in manufacturing standardized modules mean saving to you.

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North NX-2 modular system is compact, easy to install, low in cost, designed for easy, inexpensive expansion and lowest maintenance ever. It represents the result of North engineering focused specifically on the requirements of small and medium size offices.

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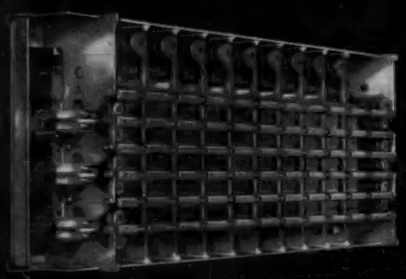
For detailed information on North NX-2, write, wire or phone

THE DYNAMIC FORCE IN THE TELEPHONE INDUSTRY

NORTH ELECTRIC COMPANY

Galion, Ohio

NORTH



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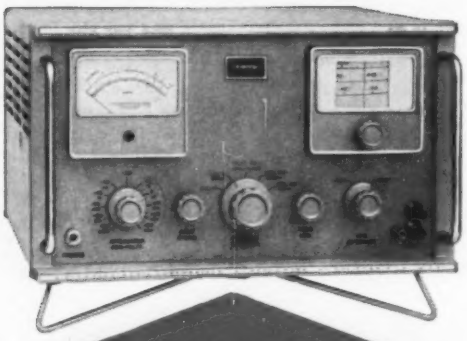

TUNABLE, dual selectivity
plus
Flat VTVM feature

Sierra Model 125A

FREQUENCY SELECTIVE VOLTMETER

Model 125A is an all-new vacuum tube voltmeter incorporating features of several previous Sierra instruments in one compact, high-performance instrument.

Covering the frequency range of 3 to 600 KC, this new voltmeter has both narrow and wide selectivity settings plus a flat voltmeter position. This triple mode measurement capability makes the Model 125A an extremely versatile instrument for carrier measurements, wave analysis and general laboratory use. Brief specifications are listed at the side. For full information and demonstration, call your Sierra representative or write direct.

SPECIFICATIONS

Frequency Range
Tunable Mode: 3 KC — 600 KC
Flat Mode: 1 KC — 600 KC

Measurement Range
Tunable Mode: –90 dbm to + 32 dbm
Flat Mode: –30 dbm to + 32 dbm

Selectivity
Narrow: down 3 db 125 cps off resonance
down 45 db 500 cps off resonance
Wide: down 3 db 1.25 KC off resonance
down 45 db 5 KC off resonance

Construction
Modular with etched glass epoxy circuit boards

Data subject to change without notice

sierra

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A Division of Philco Corporation

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6308

Button, button—push the button—and up goes the new Holan 2600-A Ladder.

The same fingertip control that made the Holan 2600—which the 2600-A replaces in the Holan line of fine aerial ladders—is present in this new model. The pushbutton control station is on the mast—and a station can be installed on the upper side rail for remote control by the man on the platform.

But a host of important design changes have been made in the 2600-A. A plate metal support frame replaces one of tubular construction; the crank for 360° rotation has been located on the left side, out of the way of the pierced metal, non-skid pedestal steps; and both the dual-level platform and 12,000-volt woodstrain insulators have been made standard equipment on the 2600-A.

The 2600-A is available in heights to 32 feet. Fiberglass covering of side rails and remote pushbutton controls optional.

Holan Corporation, 4100 W. 150th St., Cleveland 35, Ohio
Plants in: Cleveland, Ohio; Griffin, Georgia; Phoenix, Ariz.

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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR
AND EDITOR, PUBLIC UTILITIES FORTNIGHTLY

Doerfer resigns from FCC as result of congressional committee questioning his acceptance of hospitality of friend in broadcasting business. Zenith to test pay-TV again. Gas company to install widespread microwave system.

IT IS UNFORTUNATE that a combination of circumstances has magnified a minor indiscretion to the point of requiring the resignation of the chairman of the Federal Communications Commission, John C. Doerfer. But as President Eisenhower said in accepting Doerfer's resignation and praising his admitted ability and accomplishments while in office, the recent FCC chairman made "a wise decision."

Doerfer was evidently surprised at the general critical reaction to his acceptance of the hospitality of a friend in the broadcasting business. He said in his letter of resignation that he felt that he was not only justified but bound to maintain close contact with the industry regulated in order to understand what was going on. However, he told the President, "to avoid possible embarrassment to you and your administration I submit this resignation."

It should be said that Mr. Doerfer's reputation as a conscientious chairman was well-known throughout regulatory circles inside and outside of Washington. Many of his critics gave him credit for stimulating a praiseworthy innovation on the part of the TV network to devote more time to cultural programs. There was no question of any personal venality in the chairman's slip in accepting the six-day offshore cruise on the private yacht of radio-TV tycoon, George B. Storer, a personal friend. But it was felt that the mere acceptance of such favors, particularly under the limelight of the investigation by the House Sub-committee on Legislative Oversight, compromised the effectiveness of Mr. Doerfer's further service as head of the FCC.

In fact, it was something in the nature of a burnt child going back to the fire. Two years ago, during the early activities of the House sub-committee, Chairman Doerfer admitted friendship with business people licensed by his board, but that situation was overshadowed by the more controversial cases before the House sub-committee: namely former FCC Commissioner Mack, who resigned under fire, and Sherman Adams, presidential adviser who did likewise.

Doerfer will be succeeded as chairman by a fellow Republican member on the FCC, Frederick W. Ford of Clarksburg, W. Va.

The new FCC chairman is a good-looking 6-footer with graying black hair, who became an Army Air Corps major in World War II. He is a graduate lawyer (AB '31, LLB, '34) of West Virginia University. Before the war he practiced law in Clarksburg and in the Office of the General Counsel of the Federal Security Agency. He switched to the old Office of Price Administration in 1942 and returned from the war to OPA as a hearing commissioner in 1946. He joined the FCC legal staff in 1947 and served as commission counsel in several important cases until 1953, when he switched to the Department of Justice, working up to assistant deputy attorney general. Chairman Ford came back to the FCC in mid-1957, when President Eisenhower appointed him to succeed former FCC Chairman George C. McConnaughey.

This changing of the guard at the FCC comes at a most embarrassing time when the foes of commission regulation, as an institution, are having a field day of criticism. Perhaps out of it will come some recognized and accepted canon of ethics that will resolve the real problem suggested in Doerfer's letter of resignation to Eisenhower. He pointed out that the Federal Communications Act requires commissioners "to study new uses for radio and generally encourage the larger and more effective use thereof." Doerfer felt that this required commissioners to maintain regular contact with industry people. Inevitably, he suggested, such contacts "ripen into social acquaintances, and sometimes friendships, which, despite appearances, do not imperil the integrity of either the government official or the member of industry."

This may be so. And doubtless was so in the case of Mr. Doerfer, a well-motivated man. We cannot expect the members of our federal regulatory commissions to lead a monastic life in Washington. And, if they did so, their effectiveness and practical knowledge of the industry they regulate might be undermined.

The problem does not seem to be much different from problems of the judiciary, most of whom lead active, social lives and maintain outside interest without compromising their effectiveness on the bench. The situation seems to call for a canon which would spell out in more detail what a commissioner should or should not do under the circumstances.

Subscription TV Again

The dream of toll television (which now has a new nickname "payola" TV) dies hard despite insuperable roadblocks and a couple of unsuccessful tries to date. But, it may be, as the president of

Zenith Radio Corp., Joseph S. Wright, recently told the New York Society of Security Analysts, that there never was a better opportunity for subscription TV. Wright said that Zenith is going to take a whirl at a toll TV experiment with plans soon to be announced. The opportunity he was referring to, of course, was the public disenchantment with some commercial TV programs following the scandal exposes by the current investigations in Washington.

The opposition has several centers. First, there are the commercial TV broadcasters who have billions invested in the present setup. They have been making scary statements about paid TV killing off "free TV," which are far-fetched to put it mildly. Such speeches by TV broadcasting officials, asking the average citizens whether they would like to pay monthly fees for the privilege of looking at their own TV sets—following the British system—has set off such a stream of letters to congressmen that they, in turn, have taken fire. The "concern" (about the mildest word used) expressed by these congressmen has put the pressure on the FCC to postpone any authorization of full-scale paid TV operations on a permanent basis. The FCC itself has indicated that it would just as soon allow the subscription TV people a chance to see what they could do.

And, so, with these roadblocks in the way, the subscription TV proponents have two alternative courses. They can operate on a closed circuit basis—meaning without use of radio frequencies—which puts the programs to the subscriber's house via cable or telephone wire circuits. This method would probably not require FCC authorization under present law. Or, they can go ahead on a temporary trial basis, using radio frequencies with FCC approval.

It may be recalled that a closed circuit experiment was tried out several years ago in Bartlesville, Okla., and finally abandoned for economic reasons. In fact, the economic obstacle is probably the biggest of all for the proponents of subscription TV to overcome. This month a suburb of Toronto went on a closed circuit TV basis. On Mar. 3, about 1,000 subscribers had a choice of either paying for the privilege of watching a selection of moving pictures without commercials or switching their sets to regular commercial TV.

Backing the Toronto experiment is International Telemeter Co., a subsidiary of Paramount Pictures. Telemeter is installing an additional 2,000 cable connections to the Toronto suburb. But, admittedly, it would take 10,000 subscribers to reach a "break-even" point of profitable operation.

Under the Toronto set-up, the subscribers paid $5.00 to have the coin boxes and cable connections installed. But they must deposit an additional $1.00 for each evening's entertainment selected via the closed circuit channel on their TV sets. If they do not like the selection they can pass it up, and watch regular commercial TV like everybody else.

The Toronto experiment made available a number of high quality, first-run moving pictures, including "Journey to the Center of the Earth," "The Nun's Story," and "Big Circus." An electronic computing device at the control center estimates the relative popularity of each selection. Barney Balaban, president of Paramount Pictures, said he was pleased with the favorable reaction. The next step, if the Toronto experiment succeeds, would extend it into Long Island, Detroit, or possibly Los Angeles.

Zenith Radio's experiment will probably not make use of lease wires, but rather conventional radio frequency broadcasts, which would involve FCC approval.

The earlier announced system planned by Zenith is known as Zenith Phonevision. Under this system, TV radio broadcasts are scrambled until the viewer puts money into his coin box on his TV set. The deposit automatically unscrambles the picture for a specified time limit. Zenith could operate a three-year trial demonstration under present FCC rules. Zenith made a limited test of "phonevision" in Chicago in 1951, but apparently gave it up as premature at that time.

In his recent statement to the New York security analysts, President Wright of Zenith said "There was never a more propitious time for us than right now when the public is so extremely sensitive about the whole medium of television and the quality and caliber of its programing."

Offer Excise Tax Bill Insert

A two-color, 5⅛-inch x 3⅛-inch bill insert suggesting that telephone subscribers express their opposition to excise taxes on telephone service to their U. S. senators, congressmen and state legislators, is available from the United States Independent Telephone Association.

Already a total of 4 million of these 4-page inserts have been ordered by 185 companies.

Headlined, "Do You Want to Pay the 'Temporary' Luxury Tax on Your Telephone Service Forever?" the leaflet gives subscribers the reasons behind the need for repeal, under the following headings: A Tax on An Essential Service; Repeal Would Save You 10 Per Cent; Telephone User Overtaxed; An Emergency Tax — But the Emergency Is Over.

Any company which hasn't already ordered the mailing piece, will want to contact the USITA at 438 Pennsylvania Building, Washington 4, D. C. The stuffers are available at cost, namely $3.50 per thousand, F.O.B. Washington.

Industrial Microwave System

The recent announcement by the Columbia Gas System that it has taken the first step in the construction of a four-state, 470-mile, 29-station microwave communications system is one of these developments which should give telephone industry people food for thought. There is nothing new, of course, about privately-owned and operated industrial communications systems such as this. And the Columbia Gas System installation, while quite large, is not the largest.

But the fact that this important and highly integrated pipeline and distribution gas utility radio system, which will operate throughout the states of Kentucky, Ohio, Pennsylvania and West Virginia, foreshadows the growth of giant intra-industrial communications (outside the control of the telephone industry) covering large interstate areas.

The Columbia system, which is designed for 240 communication channels, will operate on the 6,000-megacycle range, subject to approval by the Federal Communications Commission. Under a contract with Collins Radio Co. of Dallas, United Fuel Gas Co. of Charleston, W. Va., a subsidiary of the Columbia System, will construct the first leg of the system between Prestonburg, Ky., and Cedarville, W. Va. The ultimate cost of the microwave system is estimated at 1.5 million dollars and will include voice communications (telephone), teletypewriter service, facsimile (for telemetering of gas facilities), supervisory control, and data communications.

The system features a completely synchronous installation, in which all carrier frequencies generation equipment is "locked" to a master oscillator with provisions for any Columbia Gas

(Continued on page 54)

PULSING PLUS

Part 1. Fresh approach to problems of economy *vs.* pulse control. How to reduce routine time and trouble index.

By D. G. PLASKETT*

THE URGE to find a better way seems to be very active in the telephone industry these days. Better telephone sets, cables, equipment and better methods are the order of the day. This urge to simplify and improve was recently applied to intertoll dialing tests.

It was hard to believe that equipment failures didn't play some part in the "No Ring," "No Answer" and "Wrong Number Reached" traffic reports, and the existing methods of testing the pulsing ability of a circuit left much to be desired. At best, some form of over-all pulsing test is usually employed that is not actually over-all, since it does not utilize the dial or sender at the transmitting-end and the selector termination at the receiving-end. This, and any other pulsing test, requires the traffic circuit to be turned down during the test. Other testing methods involve individual pulsing of parts of the equipment such as the sender, trunk and composite equipment with the hope that if they are all right, the entire circuit should be good. This method is particularly expensive, since the individual employes doing each test must study the test methods and requirements; then after the circuits are turned down and all the equipment disturbed to complete each test, the final ability of the circuit to pulse in its in-service condition is still not known.

One completely over-all test involving the sender or dial, trunk and auxiliary trunk circuits, the line and composite signaling equipment and the final selector termination, was developed simply by wiring a set of test jacks between the inter-toll selectors and the 100 test line termination. With a pulse repeating set connected to these jacks, dial pulses from a distant office could be read after the distant office dialed 100,000. The first 100 stepped the selectors into the pulse repeating set. The remaining zeros registered on the per cent break meter and the peak readings could be noted.

The average testing time per circuit with this method was measured at 1.2 minutes.

Bonus Features

Besides being able to quickly indicate pulsing ability on a completely over-all in-service condition, we found several equally important features as each irregularity was investigated to a satisfactory conclusion. By actual measurements with a milliameter, it was realized the pulse repeating set was offering a higher impedance than a selector termination. In other words, the circuit under test was operating with lower current than it normally would.

During a pulsing cycle, some of the circuits released when this high impedance arrangement was used. Investigation revealed the A relay, in series with the E lead pulsing path in the auxiliary trunk circuit would release the circuit during pulsing with our low current test if it were not properly adjusted.

Could this cause some of the "No Ring," "No Answer" traffic reports? Certainly if the circuit were released during pulsing, a traffic failure would

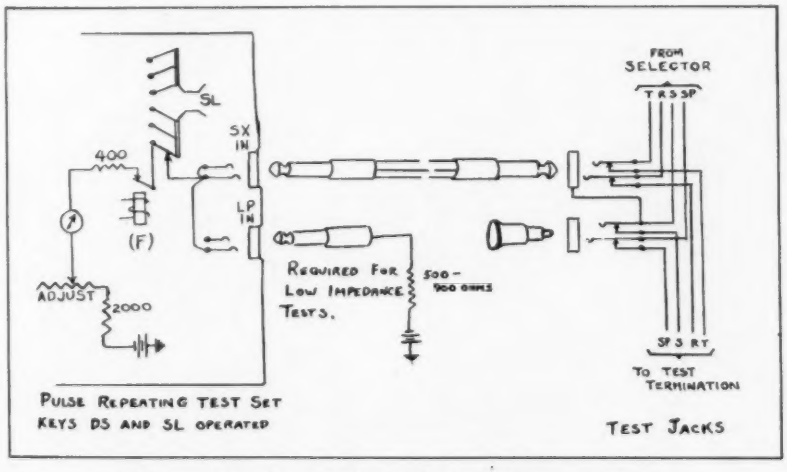


Fig. 1. The pulse repeating test set patched to test jacks.

*Mr. Plaskett is with the Bell Telephone Co. of Canada at Waterloo, Ontario. For 13 years, he has worked in construction, installation and repair departments. Before working on signaling developments, he was responsible for voice transmission maintenance. During this time he was involved in two cuts to VNL.

result. This feature is now considered an important step towards reducing our traffic signaling failures.

It was also noted that many of our circuits were only pulsing 42 per cent with a dial adjusted to 59 per cent. This trouble was peculiar to the first 80 units of the auxiliary trunk circuit, an earlier installation of the equipment. Sample readings through the equipment revealed an option that consisted of a 600-ohm resistor in series with a 4-ufd. condenser to ground. The impedance of the test set was lowered by connecting 48 volts through 900 ohms to the ring or meter side of the circuit *(Fig. 1)*. This eliminated the effects of the option, but it also eliminated our test of the relay. Since only the older installation of the equipment contained the option, and the value of the option was undetermined, it was disconnected and the high impedance test became standard.

These relays have a reputation for sticking or freezing in the operate condition after the circuit has been released. Since this holds up the called portion of the circuit, a subsequent call into this condition would result in a "Wrong Number Reached" traffic report. By plugging a resistor into the external-meter jack of the pulse repeating set, the current in the circuit could be reduced until it was equal to the release value of the A relay. A 10,000-ohm resistor provided an approximate current value of 4 ma., and when plugged into the jack after pulsing was noted, revealed three circuits held up on this low current. These three A relays were considered to be the most likely to remain operated in a released circuit. Further tests using a 6,800-ohm resistor and a current of 5 ma. revealed four more sticking relays. The circuit requirement tables showed the release value to be 4 ma. The 6,800-ohm

D. G. PLASKETT

resistor provided a slightly more critical test than was necessary but, since it produced only seven relays, it was adopted as standard.

When the plug containing the resistor is plugged into the external meter jack, the per cent break meter is released from the circuit. The SP lamp must be used to indicate whether the circuit is released or held. If the lamp remains lit with the resistor plug inserted, the A relay has a tendency to remain operated.

These tests of the A relay in the auxiliary trunk circuit can be performed without the aid of a distant office by dialing into the drop equipment and pulse repeating set by means of a signaling test set connected to the DROP signaling jacks.

So now, within 1.2 minutes, we could read the per cent break of the over-all circuit, note that the circuit remained held during pulsing and released when the resistor was inserted into the external meter jack.

Reduced Cost

Apart from the initial savings in test time, additional savings became apparent as tests were received from distant unattended offices, which under the previous testing methods, required a traveling routeman and his equipment to complete the tests. Sometimes an appointment with the routeman was hard to keep and weeks often passed before the routines could be completed.

With this over-all test, a traffic supervisor in a distant manual office could dial 100,000 on each of her trunks. The number of trunks to such an office rarely exceeds five to 10 circuits and the dialing is completed in about as many minutes. If trouble is apparent and suspected to be in that office, then a visit by a routeman is justified. While he is there, he can dial once from each position over the same trunk and provide a comparison of all the switchboard dials in that office. Dials showing considerable deviation from average should be replaced.

This test could also be used on a subscriber's dial if the subscriber complains of having trouble reaching her numbers on Direct Distance Dialing (DDD) calls. A repairman would dial 100,000 into any toll office equipped with the necessary test jacks and pulse repeating test set to read the per cent break of the dial. Regardless of whether a dial or a sender is used, the pulse generator has a direct effect on the percent break reading.

Once an excessive deviation is noted, the cause can be isolated in the usual manner. For example, if excessive deviation is apparent from the office illustrated in *Fig. 2*, the trouble can be isolated in the following manner. The

(Continued on page 52)

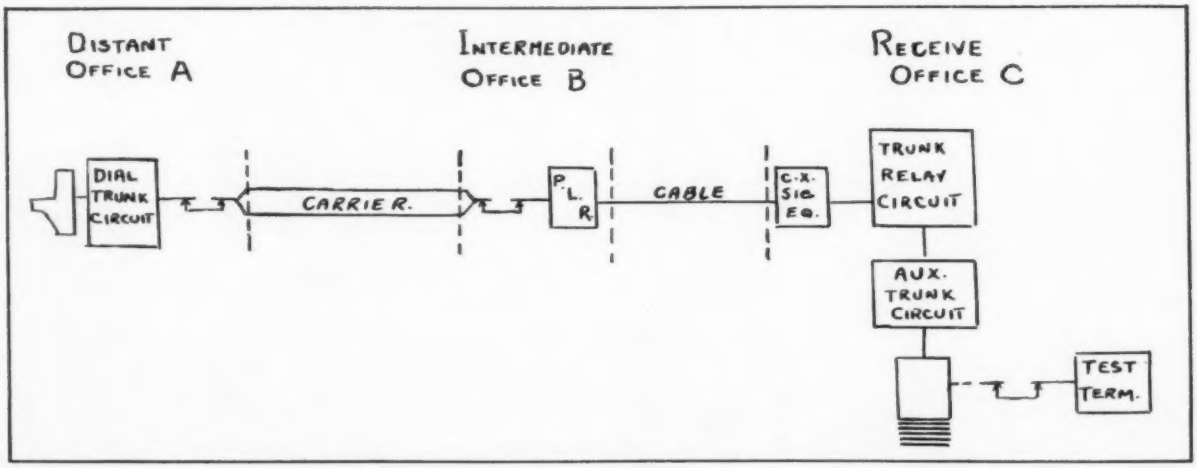


Fig. 2. A typical circuit and test jacks for isolating the cause of poor pulses.

Central Office Efficiency

Attention must be given to both quality and cost of service, for the true objective in every C. O. is to carry the highest load possible that is consistent with satisfactory service.

By WINNIE B. BURNETT*

EFFECT efficiency before the lack of it affects you. Of course, practically every idea on efficiency in the telephone central office has been cussed and discussed many times. Some of the ideas may not prove advantageous—*but* this you will never know unless you really *try them.* Many items are so elementary that answers are assumed since no thought is given to such simple things.

After having been "on the job" a long time, it is only natural that certain things are taken for granted. And right there is where many an otherwise smooth operation can bog down. Many an "efficient" leg has been broken stumbling over what appeared to be a safe assumption.

Balanced Operation

I would like to discuss some simple items that are all too often taken for granted. Yet, these little efficiency items can make or break the over-all plan for balanced operation. Most of these are such everyday things and are so close to you it may be difficult to see them in your own office. So, let's pretend that we know nothing of the office equipment, or people or office problems. Let's forget any already arrived at conclusion and try to determine what is really going on—both on long established practices *and* newer methods.

To begin with, good efficient management requires a balanced operation. Proper attention must be given to both *quality* of service and *cost* of service, for the true objective in every central office is to carry the highest load possible as is consistent with satisfactory service. To achieve this, central office time must be used effectively at all times.

The obvious methods to effect load improvement have long been used in most offices, so we must look for other means for further improvement. One of the most effective measures is *employe motivation.* The *desire* to improve must be transmitted from top management to the operating force. The latent skills and ability of the operating team must be developed before maximum productivity can be achieved.

*Mrs. Burnett is Traveling Chief Operator of Southwestern States Telephone Co. of Brownwood, Tex. She presented this address at the recent convention of the Texas Telephone Association.

WINNIE B. BURNETT

Productivity is Goal

In reaching for higher loads, be careful to not *overreach,* lest the speed of service deteriorates beyond reasonable limits. The over-all load must reflect a composite of the maximum possibilities as shown by both past and current load and service performance.

In order to achieve and maintain a day-to-day balanced operation and to improve load performance, we must recruit, hire, train and supervise with *productivity* in mind. In this day of second-saving operating procedures we simply cannot afford the "slow but sure" operator. We must develop "fast and accurate" operators, for the time of *each* operator must be put to the most effective use if a successful program results.

In the central office a time-stealer of great magnitude is the inept phrase. A poorly chosen word or phrase will nearly always result in unnecessary questions or conversation, and often impairs the tone of service. To avoid poor choice of words, standard operating phraseology should be followed usually, for experienced operators are as prone to waste time in these verbal exchanges as are the newer people.

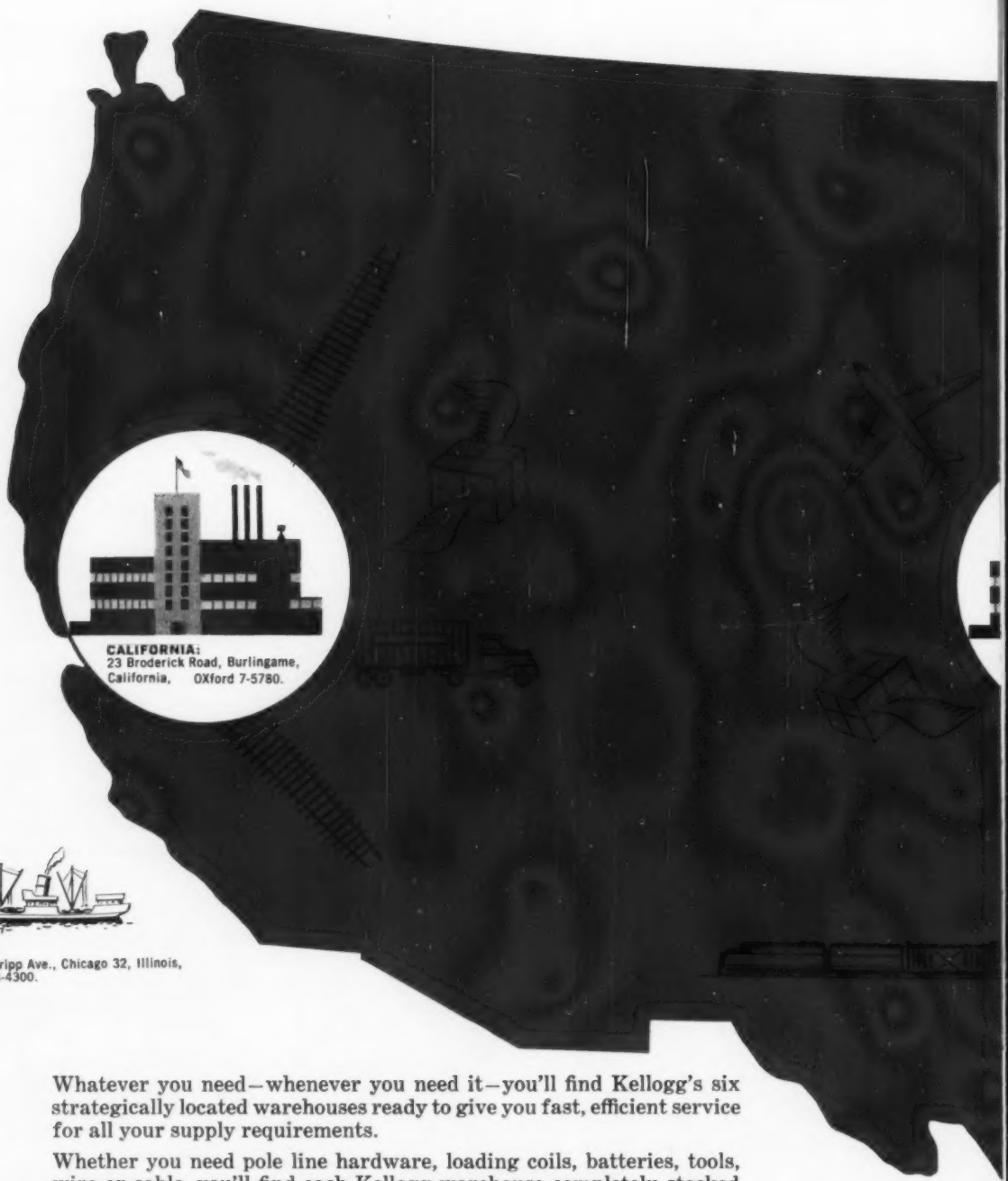
Inept Phrases

Some specific instances where wasted time is due to inept phrases are:

(1) "Will you give me your number, please?" or "May I have your number, please?" Why not "Your number, please." Only takes half the time to

(Continued on page 26)

When you need supplies.



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say it and still gets the necessary information and does not invite unnecessary conversation.

(2) "Will you hold the line, please?" or "All right, thank you. Will you hold the line, please?" Why not acknowledge simply by saying, "Thank you," and immediately advance the call? A "Will you" often begets a "No, call me" answer, resulting in a slowed down service.

(3) "Long distance is calling for Mr. (Name)" or "I have a long distance call for Mr. (Name)." The name of the called party should be given *first* to *reduce* the waiting time, as "Mr. (Name), please. Long distance is calling."

(4) "I have a collect call for you from Mr. (Name) in (Calling Place). Will you accept the charges?" This call should simply be announced as "Will you accept the charges on a collect call from Mr. (Calling Name)?" *Obviously* you have a call.

To avoid a stereotyped tone of service, it is not desirable to restrict operators to specific phrases in all cases, *but* any variations need to be tailored with the *time element* in mind!

Just as standard phraseology is intended to lessen operator "talk" time, standard operating techniques are designed to lessen operator "work" time and circuit usage time.

Recording Tips

In *recording*, the operator should:

(1) Take advantage of every opportunity to do overlap recording.
(2) Record only the necessary details.
(3) Write while listening.
(4) Talk while writing.
(5) Write speedily but *legibly* to avoid rewriting tickets.
(6) Use phonetic spelling if it seems practical and the correct spelling is not known. *Avoid* unnecessary questioning!

In *routing*, the operator should:

(1) Use memory routes. Do develop the use of *memory* on routes, rates and numbers. It's so much *faster!*
(2) Accept route from the customer.
(3) Look in the correct section of multi-leaf route book and enter only the necessary routing information on the ticket.
(4) Go at once to the route desk when necessary.
(5) Pass request properly and distinctly, as "(Called Place) route" if number has been furnished or "(Called Place) operator route" on an address name call.
(6) Record the route on the toll ticket *correctly* as it is quoted. Avoid asking for repetition.

In *advancing the call*, the operator should:

(1) Take up the *proper* circuit or trunk as soon as enough called information has been secured to advance the call.
(2) Wait for "start dial" or "sender" light before starting to dial.
(3) Dial properly to avoid redialing.
(4) Ring promptly and properly on ringdown circuits.
(5) Reach "121" (inward) only when necessary.
(6) Take prompt and proper action on NC, BY, DA, NR and other delay conditions.
(7) Accept or give a "DA" after a *one* minute ringing interval. (You'll be surprised how many operators either carelessly give a "DA" before one minute, or who use a *two*-minute interval!)
(8) Announce a call or verify a number only when it is necessary to do so.

Timing and Supervising

In *timing* and *supervising*, the operator should:

(1) Cut out promptly when ringing is heard and time from supervision when authorized to do so.
(2) Challenge only when necessary and then challenge properly.
(3) Stamp off tickets and release lines as overlap.
(4) Stamp on and off properly to avoid corrective action or adjustments.
(5) Cut-in (monitor) only when necessary.

In *handling reports*, the operator should:

(1) Repeat reports to customers only when they have obviously not been heard or understood.
(2) Use authorized codes and abbreviations for ticket entries.
(3) Record only the necessary part of reports.

In *clearing* and *releasing lines*, the operator should:

(1) Release promptly as an overlap when no clearance is required.
(2) Ring properly and promptly when ringing clearance is required.
(3) Clear to the called point when verbal clearance is required.
(4) Above all, the operator must *know what kind* of clearance is required.

Between-Call Intervals

In *intervals between calls*, the operator should:

(1) Be prepared to answer a signal by holding a cord in hand with the associated talk key *open*.
(2) Make only the authorized subsequent attempts on delayed calls.
(3) Remain alert.
(4) Answer signals in order of appearance, promptly. (Don't wait for someone else to pick up paystation signals!)
(5) Avoid unnecessary remarks to adjacent operators.
(6) Avoid unnecessary calls to the chief operator or service assistant by handling situations herself. (The chief operator should do away with all nonstandard practices unless they serve a *real* purpose peculiar to a certain office or locale.)
(7) Never, never "listen in." Not just because it is against FCC or company regulations. It is simply an unethical thing to do. (And besides, what good is it to know something you can't tell—and you'd better not tell anything heard in the line of duty advertently or inadvertently, because that is sure-fire "firing" action!)

The items enumerated here are not strange to any of you. In fact, they are probably so ever present that if the operators stray a bit, it is hardly noticed. It must be remembered, however, that a few unnecessary seconds spent here and there by each employe can upset the most carefully planned program. To be successful, good plans must be carefully executed.

Efficiency Musts

There are many, many items, too numerous to cover here, that are helpful and necessary to a well-balanced operation in any central office. To mention a few office routine efficiency *musts*:

(1) Elimination of ticket positions.
(2) A common WH trunk group.
(3) Proper use of keyshelf underglass bulletins.
(4) Memory developed by study of *frequently called* records.
(5) Customer usage training. (Customers can be trained!)
(6) Individual operator productivity and development—compare to office average.
(7) Proper maintenance of operating equipment.

To summarize:

Our objective in the central office is to carry the highest load possible as is consistent with satisfactory service and fair remuneration. Cost is not the only consideration, but it is an important one.

We must avoid "management by presumption" by taking a fresh look, get the facts and appraise the situation in "*cost*" terms, the *time* purchased from individuals. *Increase* individual productivity.

We must translate these time savings into money savings by gradually raising the over-all load. Increase *individual* productivity.

Work Quantity Too

We must get the facts on actual work interval performance, set standards and see that these standards are met. Increase individual *productivity*.

We must "hire" and "train" with work "quantity" in mind as well as work "quality."

So we must get the facts, establish standards and let the individual employes know what is expected of them. And constantly check to see that proper work and time saving procedures are understood and followed. *Don't* take things for granted—get all the facts!

We must train our people to "work smarter rather than harder."

The Potential Market for

Telephone Answering Devices in the Service Industries

By ALEXANDER I. WARRINGTON*

THIS IS the third installment of Mr. Warrington's article presenting statistics on the so-called service industries, by regions and states, which constitute a big potential market for telephone answering devices. The statistics given in the series should be of value to market analysts in telephone companies and those in charge of marketing telephone services.

The second installment was published in the Mar. 12 issue, in which market data were presented for REGION II. Middle Atlantic—New York, New Jersey and Pennsylvania.

The first installment, on REGION I. New England—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut, was published in the Mar. 5 issue.

REGION III. East North Central—Ohio, Indiana, Illinois, Michigan and Wisconsin.

(See "Impact of Telephone Communication Economies of the Various Geographical Regions of the U. S."—TELEPHONY, Aug. 1, 1959.)

*Mr. Warrington is an Industrial Economist of Baton Rouge, La., and has authored many articles for TELEPHONY during the past several years.

Ohio

The 166,400 service units in the state accounted for 27.3 per cent of the regional total; 90,800 were without payrolls and 75,600 had payrolls.

The 12 metropolitan areas shown in *Table 2* (page 28) absorb 70.0 per cent of all service units in the state.

The potential for answering devices

TABLE 1

Total Number of Service Units, East North Central Region, 1960

Geographic Region and State	Total Number of Service Units			Percentage Distribution
	Without Payrolls	With Payrolls	Total	
East North Central	321,600	286,000	607,600	100.0
Ohio	90,800	75,600	166,400	27.3
Indiana	32,400	34,400	66,800	10.9
Illinois	103,200	84,000	187,200	30.8
Michigan	58,400	60,400	118,800	19.5
Wisconsin	36,800	31,600	68,400	11.5

This is the most basic table of the entire series. It is based upon the "1954 U. S. Census of Selected Service Industries," which was adjusted for 1960.

"Service units without payrolls" (first column) are, for the most part, individuals who operate some kind of service establishment as a regular business and without paid help.

"With payrolls" signifies service units that maintain paid employes.

runs as follows: Primary market 81,700; secondary market, 18,200; tertiary market, 21,200. The total of 121,100 reflects 3.3 per cent of total telephones.

Indiana

Service units accounted for 10.9 per cent of the regional total. The 66,800 service units were composed of 32,400 without payrolls and 34,400 with payrolls.

Six metropolitan areas, shown in *Table 2*, took in 36.6 per cent of the state service units.

The potential for answering devices instruments runs as follows: Primary market, 29,200; secondary market, 8,200; tertiary market 9,600. The total of 47,000 represents 2.8 per cent of total telephones.

Illinois

This state had the largest number of service units in the region, or 30.8 per cent of the regional total. The 187,200 service units were made up of 103,200 without payrolls and 84,000 with payrolls.

The five metropolitan areas absorbed 70.5 per cent of all service units as indicated in *Table 2*.

The various potentials for answering devices run like this: Primary market, 92,900; secondary market, 20,200; tertiary market, 23,500. The total of 136,600 is 3.3 per cent of total telephones.

Michigan

The 118,800 service units account for 19.5 per cent of the region's total and the state has 58,400 without payrolls and 60,400 with payrolls.

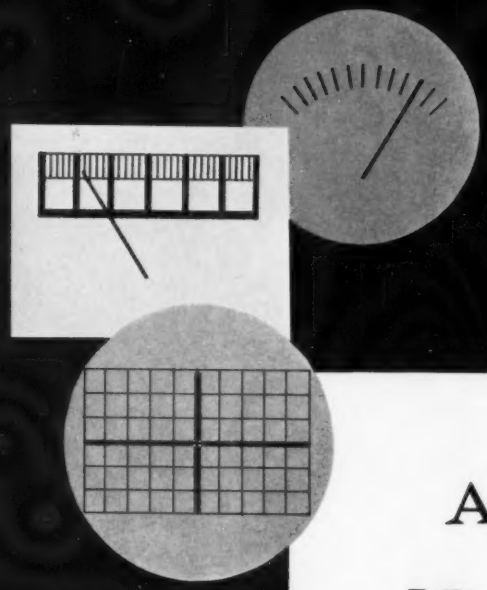
(Continued on page 34—see Tables 3 and 4 on page 31)

TABLE 2

Total Number of Service Units, East North Central Metropolitan Areas, 1960

State and Metropolitan Area	Total Number of Service Units			Percent of State Total
	Without Payrolls	With Payrolls	Total	
Ohio	90,800	75,600	166,400	100.0
Cleveland	17,200	17,200	34,400	20.6
Cincinnati	8,400	9,200	17,600	10.5
Columbus	6,000	6,000	12,000	7.2
Toledo	5,200	4,400	9,600	5.7
Dayton	5,200	4,400	9,600	5.7
Youngstown	5,200	4,400	9,600	5.7
Akron	4,800	4,000	8,800	5.2
Canton	3,600	2,800	6,400	3.8
Hamilton-Middleton	1,600	1,200	2,800	1.6
Lorain-Elyria	1,600	1,200	2,800	1.6
Springfield	1,200	800	2,000	1.2
Linn	1,200	800	2,000	1.2
Indiana	32,400	34,400	66,800	100.0
Indianapolis	4,800	6,400	11,200	16.7
Fort Wayne	1,600	2,000	3,600	5.3
South Bend	1,600	2,000	3,600	5.3
Evansville	1,200	1,600	2,800	4.1
Terre Haute	800	1,200	2,000	2.9
Muncie	800	800	1,600	2.3
Illinois	103,200	84,000	187,200	100.0
Chicago	62,000	56,400	118,400	63.2
Peoria	2,800	2,400	5,200	2.7
Springfield	1,600	1,600	3,200	1.7
Rockford	1,600	1,600	3,200	1.7
Decatur	1,200	1,200	2,400	1.2
Michigan	58,400	60,400	118,800	100.0
Detroit	24,800	31,600	56,400	47.4
Grand Rapids	2,800	2,800	5,600	4.7
Flint	2,400	2,400	4,800	4.0
Saginaw	1,200	1,200	4,200	3.5
Lansing	1,200	1,600	2,800	2.3
Kalamazoo	800	1,200	2,000	1.6
Jackson	1,200	800	2,000	1.6
Bay City	800	800	1,600	1.3
Wisconsin	36,800	31,600	68,400	100.0
Milwaukee	8,400	8,800	17,200	25.1
Madison	1,600	2,000	3,600	5.2
Racine	1,600	800	2,400	3.5
Kenosha	400	800	1,200	1.7

Information is of the same type as in *Table 1*, except data are for metropolitan areas.



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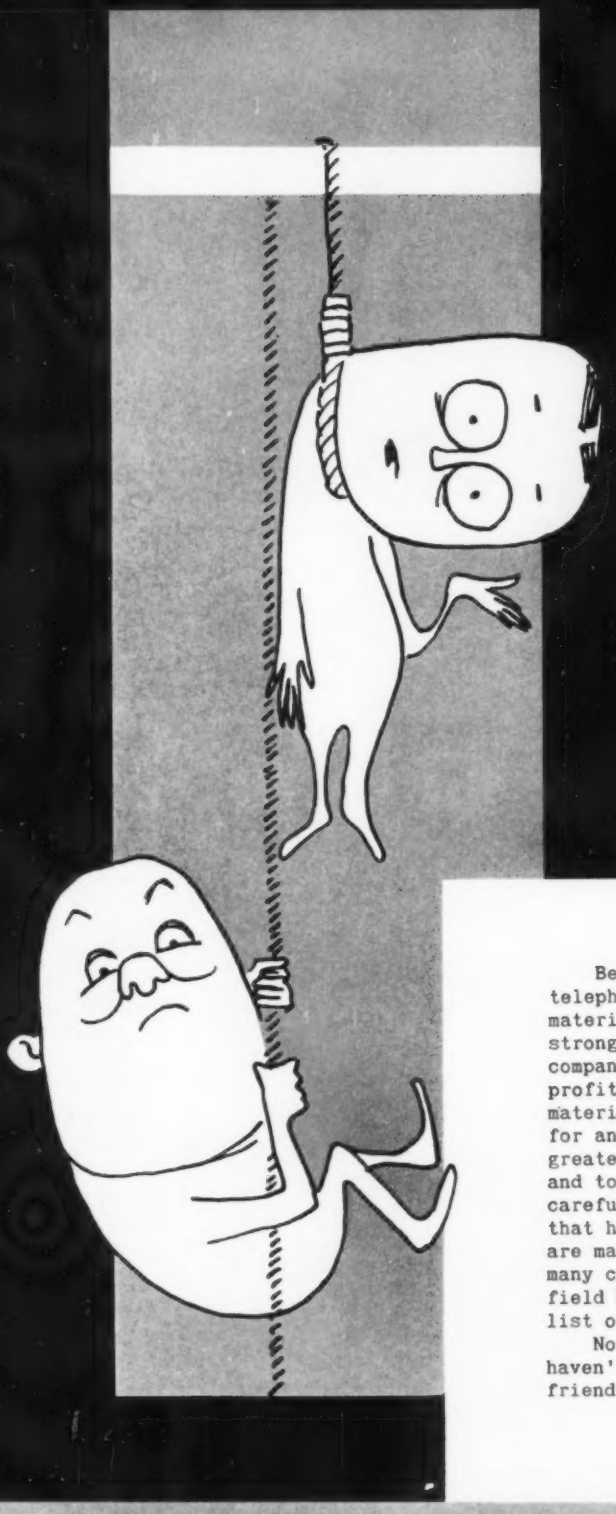

including rope

Because we do such a large business in telephone supplies and construction materials, we feel our obligations strongly. Our policy is that telephone companies can only operate efficiently and profitably by using the highest quality materials. In most cases the labor costs for any particular project are as great or greater than the cost of the materials and tools used. We are therefore very careful in recommending products to you that have been proved on the job and that are made by reputable manufacturers. In many cases, new products are tested in the field before they are added to the Leich list of dependable supplies and materials.

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TABLE 3

Market Potential for Answering Instruments for the East North Central Region, by Degree of Intensity, 1960

Geographic Region III and State	Number of Service Units			Total Number of Service Units
	Primary Market	Secondary Market	Tertiary Market	
East North Central:	321,600	85,800	200,200	607,600
Ohio	90,800	22,700	52,900	166,400
Indiana	32,400	10,300	24,100	66,800
Illinois	103,200	25,200	58,800	187,200
Michigan	58,400	18,100	42,300	118,800
Wisconsin	36,800	9,500	22,100	68,400

The *primary* market is the market which will require the least effort and the units shown therein are close to the total of the number of answering devices needed. The need is urgent because the operator or the service unit has no tangible human assistance.

The *secondary* market represents service establishments that have one and only one paid assistant. This is also a rich potential market for telephone answering devices. Approximately 80 per cent of service units with one paid employe need answering instruments.

The tertiary market represents the balance of service units and has a potentiality for telephone answering devices of from 30 to 50 per cent of the units shown.

TABLE 4

Market Potential for Answering Devices, for the East North Central Metropolitan Areas, 1960

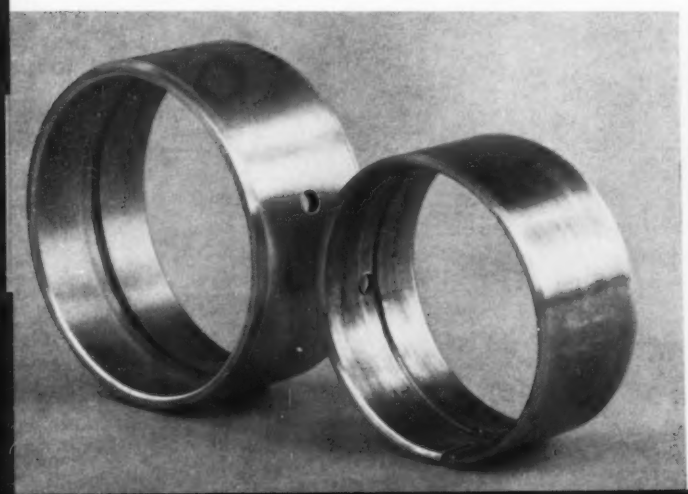
State and Metropolitan Area	Number of Service Units			Total Number of Service Units
	Primary Market	Secondary Market	Tertiary Market	
Ohio	90,800	22,700	52,900	166,400
Cleveland	17,200	5,200		34,400
Cincinnati	8,400	2,800		17,600
Columbus	6,000	1,800		12,000
Toledo	5,200	1,300		9,600
Dayton	5,200	1,300		9,600
Youngstown	5,200	1,300		9,600
Akron	4,800	1,200		8,800
Canton	3,600	800		6,400
Hamilton-Middleton	1,600	400		2,800
Lorain-Elyria	1,600	400		2,800
Springfield	1,200	200		2,000
Linn	1,200	200		2,000
Indiana	32,400	10,300	24,100	66,800
Indianapolis	4,800	1,900		11,200
Fort Wayne	1,600	600		3,600
South Bend	1,600	600		3,600
Evansville	1,200	500		2,800
Terre Haute	800	400		2,000
Muncie	800	200		1,600
Illinois	103,200	25,200	58,800	187,200
Chicago	62,000	16,900		118,400
Peoria	2,800	700		5,200
Springfield	1,600	500		3,200
Rockford	1,600	500		3,200
Decatur	1,200	400		2,400
Michigan	58,400	18,100	42,300	118,800
Detroit	24,800	9,500		56,400
Grand Rapids	2,800	800		5,600
Flint	2,400	700		4,800
Saginaw	1,200	400		4,200
Lansing	1,200	500		2,800
Kalamazoo	800	400		2,000
Jackson	1,200	200		2,000
Bay City	800	200		1,600
Wisconsin	36,800	9,500	22,100	68,400
Milwaukee	8,400	2,600		17,200
Madison	1,600	600		3,600
Racine	1,600	200		2,400
Kenosha	400	200		1,200

This table is identical with *Table 3*, except it is for metropolitan areas.

Onan Electric Plants are when this independent

Big, beefy bearings for longer life. (Lower left) double-size Onan bearings vs. small bearings (right) used in many other makes. Larger bearing surface reduces wear, stretches time between overhauls. Onan builds up to performance—never down-to-a-price.

The engine that ran equivalent to 487,888 automobile miles. Here's endurance no auto could begin to match. Onan engine #1068 was operated for 12,197 hours. It was stop-started 100 times. At test's end #1068 and generator were delivering their stated output.



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His job is to provide a double-check on Onan's own tests and testing methods

The man at the left is an expert from an independent testing laboratory. On the job, he believes nothing except what his trained eyes, ears and scientific testing instruments tell him.

He, and others like him, pay frequent surprise visits to Onan factories. He can pull any Onan plant off the test line. Put it through its paces. Recheck the checks Onan engineers and inspectors have already made. He has authority to pull a whole series of plants off the line if he finds one fault. He does all this even though every Onan plant is tested for hours by Onan personnel *before it is shipped.*

Onan takes these special precautions to make *doubly* sure that you get all that you pay for, and more, when you own a Performance Certified Onan. For more details—and an analysis of your primary and stand-by power needs—see the Onan distributor nearest you. He's listed in the telephone classified section in all major cities. Or write direct.

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We guarantee that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.
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Continued from page 28

Table 2 indicates eight metropolitan areas which take up 66.4 per cent of all the service units in the state.

The potentials for answering devices are as follows: Primary market, 525,000; secondary market, 145,000; tertiary market, 16,900; with a total of 686,900 answering instruments which is 2.9 per cent of the total telephones.

Wisconsin

This state accounted for 11.5 per cent of the total service units in the region. Of the 68,400 service units, 36,800 were without payrolls and 31,600 with payrolls.

The four metropolitan areas shown in *Table 2* absorbed 35.5 per cent of the state's service units.

The potential markets for answering devices are as follows: Primary market, 32,100; secondary market, 8,500; tertiary market 8,800, with a total of 49,400 which is 3.6 per cent of total telephones.

TABLE 5

Percentage of Total Telephones Absorbed by Service Units, in the Primary, Secondary, Tertiary Markets for Answering Devices

Geographic Region III and State	Total Number of Telephones	Percentage of Total Telephones Absorbed by Service Units			Total Number of Telephones
		Primary Market	Secondary Market	Tertiary Market	
East North Central	13,759,000	2.3	0.6	1.4	100.0
Ohio	3,663,100	2.4	0.6	1.4	100.0
Indiana	1,624,700	1.9	0.6	1.4	100.0
Illinois	4,122,400	2.5	0.6	1.4	100.0
Michigan	2,989,100	1.9	0.6	1.4	100.0
Wisconsin	1,359,700	2.7	0.6	1.6	100.0

This table should be useful to market analysts in making more detailed analyses and also in adjusting *Tables 1* through *4* annually. The adjustment of *Tables 1* through *4* can be made by using total telephones as a base. With the elasticity that is provided by *Table 5*, *Tables 1* through *4* should prove of service for at least five years.

N. Y. Hotel Uses TV to Keep Tabs on Telephone Bills

The Taft Hotel in New York now uses closed circuit television to keep track of its guests' telephone bills, according to the United Press International.

To avoid departure delay, at checkout time, cashiers in the lobby press a button, and their TV screens scan the guest telephone register, 22 stories above, giving final bill information quickly.

Third Balloon Shot Relays Voice Signal Successfully

An Associated Press story datelined from Washington, D. C., Feb. 28 reported that another plastic sphere had been shot into space and had successfully bounced a radio voice signal back to earth.

Described as the third test of the plastic balloons, the 130-pound plastic bag expanded into the air to the height of a 10-story building, and the distance traveled by the big sphere was given as 225 miles into the air. It was launched from Wallops Island, Va.

The latest balloon shot was another in the satellite communications program directed by the Bell Telephone Laboratories at Holmdel, N. J. A 12-sentence oral message, on this occasion, was beamed at the plastic sphere, and received, on the bounce, at the Massachusetts Institute of Technology station, Round Hill, Mass., and at the General Electric Co. laboratories at Schenectady, N. Y.

These balloons are to be placed in orbit, and ultimately will serve as reflectors for radio signals, including voice transmission.

Tuck School Issues New Bulletin on Depreciation

The Amos Tuck School of Business Administration at Dartmouth College, Hanover, N. H., has announced its latest bulletin, Number 23, "The Many Sides of Depreciation," prepared by Professor Leonard E. Morrissey of the Tuck School accounting faculty.

Depreciation, the Tuck School points out, is a subject about which many businesses (including regulated industry) are concerned. The inconsistencies in the relation between depreciation for tax purposes and depreciation in financial statements are of special concern to accounting and rate-making personnel.

Tuck Bulletin Number 23 begins with the familiar aspect of depreciation—the process of allocating costs of buildings, machinery and equipment over the period of their expected lifetime. It proceeds to the more difficult problem of how to estimate a new asset's useful life, and here, the author of the bulletin provides answers to questions about various methods of allocation, and other procedures.

Such questions as what was paid for it, or what a company will have to pay to replace it are explored in the light of the 1954 Revenue Code. About half the bulletin is devoted to accelerated depreciation, its advantages, and some of the difficulties it has created.

A section under the heading of *Regulated Industries* concerns accelerated depreciation in rate-making.

Tuck Bulletin Number 23, "The Many Sides of Depreciation," is available free on request direct to the Tuck School. The booklet is 23 pages long and written in "businessman's language."

To Stem Inflation

"Should future booms develop the intensity of the 1955-56 [economy], price increases are bound to be the rule unless all sections of the nation—government, private business, labor unions, farmers, and consumers—recognize the necessity for joint anti-inflationary action. A general determination to keep prices stable can succeed; but neither the monetary authorities nor the government alone can beat this menace."—JOHN S. PROCTOR, *president, Imperial Bank of Canada.*

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

WE HAVE received an interesting letter from R. R. MacCormack, of the Rye (Colo.) Telephone Co., on the splicing of rural distribution wire in the 4, 6 and 16-pair sizes. This man has developed a method that does not require any special tools and one that will provide trouble-free service throughout the life of the wire. His letter states in part as follows:

"About a year ago I had to repair a 16-pair rural distribution cable that had been cut by a passing oil rig. This trouble placed 83 telephones out of service, but by using my method, it was repaired and back in service within three hours.

"This week, after 22 months in service, we replaced the 16-pair rural distribution cable with a new 50-pair. We inspected the repaired splice made in the old cable and found it in excellent condition. The conductors were spliced with Nicopress sleeves and the splices covered with Superor Cable Corp.'s filled plastic sleeves.

"The filling inside the Superior sleeves was still fluid; however, the dope at the ends had hardened and set to the extent that the sleeve appeared to be part of the colored plastic insulation on each conductor. This splice had endured 103° summer heat and —17° winter cold with a 73-mile-an-hour wind without a single failure.

"The following tools, material and methods were used to make this splice:

"One Reliable self-locking wirelink #5059.
Nicopress tool 17-3.
6-inch diagonal cutting pliers.
32 Nicopress No. 3-036A sleeves.
32 Superior Cable Corp. super splice filled plastic sleeves, diameter: .105.

"The 16-pair cable was let down from two 'J' hooks on each side of the break and the 109 wire spliced with the Reliable #5059 wirelink in the usual manner. The 16-pairs were stretched before breaking and this permitted the splices to be staggered."

•

The Bell Magazine reports that, each working day, about 17,000 telephones are added to the 76 million now in service in the United States and Canada. This means a gain of 85,000 by the close of business each Friday, over 340,000 by the end of each month and over 4 million by the end of the year.

•

A device known as the "Telecon Projector" is used in connection with teletypewriter conferences. This is a special teletypewriter machine which reproduces the electrical impulses received on a transparent material. This copy is then optionally enlarged and projected on a large screen. Two of these machines are used for a teletypewriter conference, one for sending and one for receiving.

The writer enjoyed a demonstration recently where the telecon projectors were replaced by closed circuit television. This is accomplished by mounting a high resolution television camera above the copy on a standard teletypewriter machine. With this arrangement, the incoming message is televised as it is being typed. This television image is reproduced on a large screen video monitor.

The advantage of this arrangement is that the television camera can pick up and reproduce the copy no matter how fast it is being received. This means that the same equipment can be used with any teletypewriter at any speed.

Moreover, the television monitor is completely silent and does not create the disturbing effect of the telecon instrument.

Furthermore, television can be fed to two or more monitors simultaneously, thereby reaching more people at very little additional cost.

•

"On the Line," published by the post office headquarters in Australia, gives the following description of the numbering system used in that country:

"Long-term plans for the overall telephone system in Australia have as their ultimate aim the provision of a system whereby subscribers will be able to dial their own calls to other subscribers anywhere in Australia. An important element in these plans is the policy of expressing telephone numbers in figures only.

"The all-figure telephone number allows for faster and more accurate dialing, simplifies accounting, and eliminates unusable groups of numbers which show up when three-letter numbers are considered.

"More important still, the all-figure telephone number smooths the way for the introduction of telephone numbers like 066 - 78 - 2468 which will be needed when subscribers can dial any other Australian subscriber, no matter where he lives. The 78 2468 part of this number will be called the local code and will be all that will have to be dialed for local calls. The 066 part of the number could be the area code for a particular region which will be used when dialing trunk calls."

•

Utility and pipe line companies are often concerned with galvanic corrosion of underground gas and oil lines. Stray currents through the soil can initiate serious attack on metal pipe. To offset this possibility, it has become common practice to attach to the underground pipe line buried electrodes that will be preferentially consumed by stray galvanic attack. These installations are made at known danger points.

Instruments have been developed which can chart the progress of this subsurface corrosion. They are used to indicate when the electrodes are completely corroded and the pipe itself in danger of attack. This testing is usually performed at widely spaced intervals.

•

A good book for the technical minded telephone man is titled: "Advanced Magnetism and Electromagnetism." This 104-page paper cover book can be procured from TELEPHONY for $2.25.

The contents of this book penetrate deeply into the various underlying magnetic and electrical phenomena. Included are the details on the force acting on a charge moving through a magnetic field, induction lines, mag-

(Continued on page 38)

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a complete package for your dial

Changes, changes, changes! That's what happens when you convert to dial. Your central office equipment must be changed. New phones must be installed. Your outside plant may require replacement. But, the results are worth it...

If your changes are made properly, you provide better service and boost your revenue. Dealing with AE is mighty good assurance of getting things done the right way from start to finish. That's because we offer *a complete package* designed to meet *all* your conversion needs.

Are you planning a dial conversion? Then get in touch with us. We've helped hundreds of telephone companies to solve their dial conversion problems. We'd like to do the same for you. Just write Automatic Electric Sales Corporation, Northlake, Illinois. In Canada, Automatic Electric Sales (Canada) Ltd., 185 Bartley Drive, Toronto 16.

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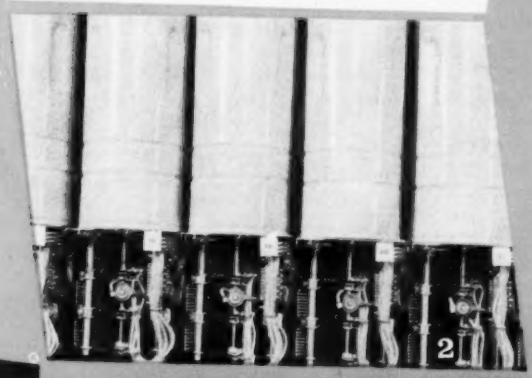
3 Dial paystations in a choice of 10 colors. The color attracts attention. And, with dial service, it's easier to make paystation calls. Result: You increase revenue from people on the move.

4 P-A-B-X systems. When you convert an exchange, your PBX subscribers will want to change to dial. AE offers you stock delivery on six P-A-B-X models. And, there's a choice of 16 auxiliary services to meet special needs of your customers.

5 Transmission facilities. AE offers facilities and equipment for all transmission needs—open wire, cable, microwave and carrier.

6 Automatic Toll Ticketing. The simple circuits and unitized construction of Strowger equipment permit it to be adapted quickly and economically to provide automatic toll ticketing. And, Strowger equipment works directly into accounting machines, without converters.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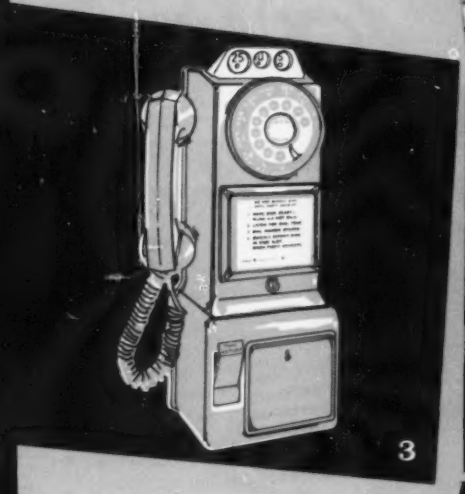
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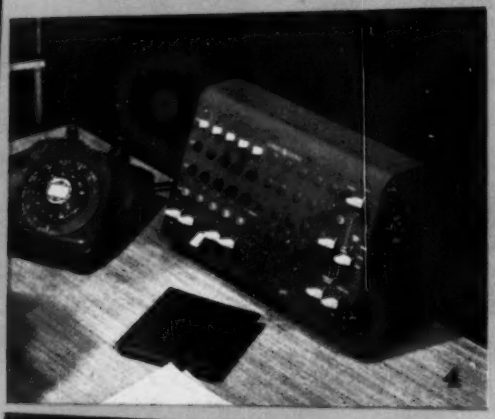
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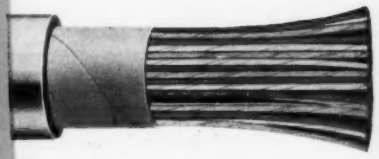
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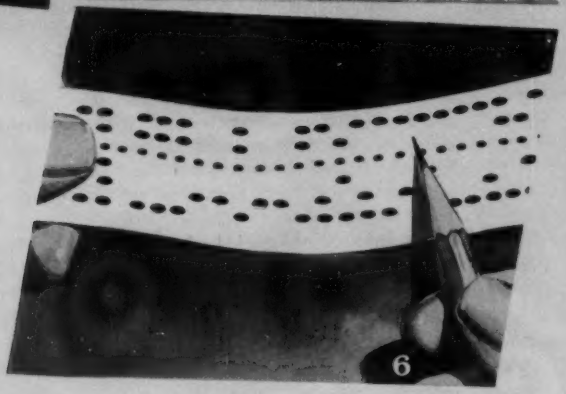
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netic flux, Biot's Law, Faraday's Law, Lenz's Law, and the Curie-Weiss Law. Extremely interesting material is presented on the domain theory of magnetism.

In all respects, it introduces the reader to the most modern concepts of magnetism and electromagnetism in a very lucid and understandable manner. Also covered are such items as the cyclotron, the mass spectrograph, and terrestrial magnetism. Review problems are given at the end of each chapter.

Each of the chapters also contains numerical examples which show the application of the equations as they are explained.

•

It is reported that Russian visitors to the United States Exhibit in Moscow last year indicated considerable interest in American telephones. This is understandable since, under Russia's government-owned system, only one person in 50 has telephone service.

In this country, one out of every three people has a telephone. In addition, with 60 million-plus telephones, the United States has more than half of the entire world's telephones.

•

The Michigan Bell has a suggestion system which is proving highly successful. It shares the savings with the suggestors.

Twice a year suggestions are reviewed by a committee after they have been tried, after which cash awards are made, based upon the value of the ideas to the company.

•

Back in 1949, the Southwestern Bell territory had a population of 17,700,000 and 3,336,165 telephones.

In 1959 the population had increased to 20,300,000 and the telephones to 5,880,748. Also, in 1949 they had 172,216 residence extensions which increased to 741,115 in 1959.

•

Contentment comes not so much from great wealth as from few wants.

•

People in our 49th and largest state are getting tired of hearing Texans complain about being the second largest state in the Union. If the Texans do not discontinue this practice, the Alaskans threaten to split in half so that Texas will then be the number three state.

•

According to FBI Director J. Edgar Hoover, crime costs every American $128 a year.

Plant Man's QUIZ

By RAY BLAIN, Technical Editorial Director

Q. Now that DDD is coming into the picture, what type of equipment do you think Independent companies must provide to signal over toll circuits?

A. One authority on the subject states that it is now practical to dial over any type of toll circuit that may be used for intertoll service. The method most suitable for any specific case is indicated by the electrical make-up of the toll circuit, and, to some extent, by the ownership of the toll circuit.

Short-haul toll circuits will normally be operated on a dc dialing and signaling basis. The majority of toll circuits terminated at Independent toll centers are in this class.

Loop dialing is suitable for circuits up to 3,000 ohms loop resistance, if the circuits are not phantomed or composited.

Simplex (SX) or Composite (CX) Dialing is used when the circuit resistance is too high for loop operation, or when the toll circuits are phantomed. Two different methods of SX-CX dialing are available for intertoll dialing.

One method, frequently used on circuits between two Independent exchanges, employs battery pulsing and battery-and-ground signaling. The normal range, with 48-volt operation, is limited to 3,000 ohms loop resistance for simplex circuits, and approximately 1600 ohm loops for composited circuits.

Voice-frequency dialing (VFD) is the preferred method of ac dialing over toll circuits, because voice-frequency signals can be passed through voice repeaters or over carrier circuits without requiring any special pulse-repeating equipment.

Independent-owned toll circuits are generally not long enough to require VFD operation. The need for this dialing method will more frequently be required on Bell-owned circuits terminating at Independent exchanges. In these cases, it is likely that Bell System standards will prevail.

Multi-Frequency Pulsing is another voice-frequency pulsing system, but it is not a signaling system. It is a high-speed pulsing system employing six different frequencies, in which each digit is transmitted by the simultaneous applications of two voice frequencies. It is designed specifically for pulsing into common-control systems with registers. Its chief advantages are higher speed of pulsing over toll circuits and reduced holding time of the registers.

•

Q. Is it necessary to use filled sleeves in the splicing of conductors in a plastic-insulated cable?

A. These sleeves are made of plastic tubing, closed at one end and filled with a sealing compound. This type sleeve will provide a water-resistant seal on straight, bridged or butt, twisted pigtail joints. One type sleeve is filled with an improved compound which makes it unnecessary to solder twisted joints except in special cases.

•

Q. Is it true that a test pick should not be used to identify pairs in a plastic-insulated cable?

A. The insulation of plastic cable should never be punctured if it can possibly be avoided. A pin hole may cause leakage trouble if water enters a cable.

If a test pick must be used in identifying conductors, the punctures should be confined to a very short length of the insulation. Then, cover the puncture holes with short lengths of vinyl tape to restore the dielectric strength of the cable.

•

Q. Is it practical to use precast concrete manholes on an underground conduit system?

A. In our opinion, precast concrete manholes could be used to advantage on a large conduit job. They have been used on a few jobs in the past.

Perhaps the greatest objection to their use is the excessive weight. Some type of a motorized crane is required to place the manhole in a position for connecting the conduit.

Courts and Commissions

Zenith and Another to Ask FCC Authority for Pay-TV

It was reported in the *Wall Street Journal* of Mar. 9 that the Zenith Radio Corp. and "another large company" would ask the Federal Communications Commission "before the end of the month" for authority to test subscription television in an "important" United States area. (See also "In the Nation's Capital," this issue.)

Spokesman for Zenith was Joseph S. Wright, president, who disclosed his company's plan in an appearance before the New York Society of Security Analysts. Mr. Wright stated that Zenith has completed preliminary negotiations with the unnamed other company for pay-TV activities "on a broad basis."

Mr. Wright added, "We expect within . . . a few weeks to be able to go to the FCC with the details of the proposed initial operation."

Zenith's Phonevision system would bring TV programs into the home, without the commercials, and its broadcasts would be scrambled until the viewer put money into a coin box on his TV set. This system was tested in Chicago by Zenith in 1951.

The Phonevision system is not to be confused, the *Journal* pointed out, with the pay-TV system operated in Toronto, Canada, by a Paramount Pictures Corp. subsidiary. Because Zenith's system uses the airwaves, the company needs the permission of the FCC, which controls broadcast frequencies in the United States.

Thus far, the FCC has not authorized any permanent pay-TV in the U. S., though it does permit three-year trial demonstrations.

Bell, Pa. Independent Ask End Tolls for 3 Exchanges

The Bell Telephone Co. of Pennsylvania and the Lewisberry Telephone Co. have jointly asked Pennsylvania Public Utility Commission approval, it was reported on Mar. 3, to eliminate toll charges on calls between Harrisburg-Mechanicsburg and the Lewisberry exchanges. Effective date for elimination of tolls would be Apr. 24.

The proposed change would mean savings on tolls to Lewisberry for subscribers served by Bell's Harrisburg and Mechanicsburg exchanges.

The rates for Lewisberry's 1,111 subscribers would increase as follows:

	Old	*New*
One-party residence	$4.00	$5.75
Two-party residence	3.00	6.25

There would be no changes for Harrisburg and Mechanicsburg subscribers on regular service rates.

The Lewisberry company reported to the commission that a poll of its subscribers taken last year indicated they would be willing to accept higher rates if tolls were eliminated.

North Carolina Company Seeks a Rate Increase

The Old Fort Telephone Co. asked the North Carolina Utilities Commission on Mar. 8 for authority to increase its rates by a total of $13,464 annually.

The company stated that it had a net loss of $4,358.21 last year and indicated that even with the increased rates, it would sustain a net loss of about $987.40 this year.

Old Fort company proposes to increase its rates for one-party residence service from $2.50 to $5.00; and for one-party business service, from $3.50 to $7.00.

It was reported that as of Dec. 31, 1959, the company had 341 residence and 77 business telephones.

Rule Pacific T&T to Serve Unassigned Area in Cal.

The California Public Utilities Commission on Feb. 29 ruled that subscribers in an area between Pacific Telephone & Telegraph Co.'s San Juan Capistrano exchange, and General Telephone Co.'s Laguna Beach exchange, should be served by the Pacific company.

General had, in May 1959, filed an Advice Letter with the commission expanding its Laguna Beach exchange to include this unassigned territory.

Pacific protested this, saying that it had in February 1959, received two applications for service from persons residing in this territory, and had been studying the feasibility of providing service to them.

The Pacific company further stated that it had determined that this service was feasible, and that it could furnish it by including the territory in the Trabuco district area of its Santa Ana exchange. It also filed an Advice Letter, including the territory within the Trabuco district and this was approved by the commission.

General had contended that it should be allowed to serve because (1) the territory will become a self-contained community in the future and (2) it had filed on the area before PT&T had.

The commission, in its ruling said:

"With respect to the first contention, the record does not show that the area in question will become a self-contained community in the foreseeable future, and for this reason, this contention is without merit.

"However, the defendant's other contention must be accorded great consideration.

"Normally, a utility that takes the initiative in attempting to serve previously unserved areas should be favored.

"In the present case, however, it is the commission's opinion, and it so finds and concludes, that the public interest so . . . favors service in the area in question by the complainant (Pacific telephone) that the considerations in favor of the first to file are overcome and the complainant should be allowed to serve the area in question."

Dismiss Suit by General Against Jacksonville, Tex.

Following an application by the General Telephone Co. of the Southwest, the 145th Texas District Court dismissed the company's permanent injunction suit against the city of Jacksonville (TELEPHONY, Feb. 27).

The court's order also removed liability of the General company and its bonding agency for a $100,000 bond the company had posted for the interim to guarantee refunds to subscribers if final rates were less than those put into effect under the injunction.

The Jacksonville city council and the General company have agreed on rates and other details. However, the company still has not been granted renewal

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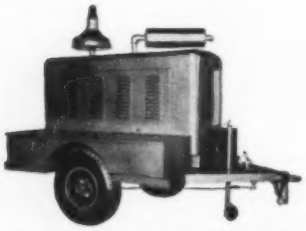

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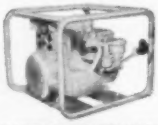

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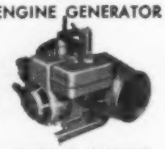

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of its franchise to operate in Jacksonville and has operated without a franchise since Dec. 31, 1958.

OK Raise in Ga.; Rehear Plea To Operate As Toll Center

The Blue Ridge Telephone Co. recently was given approval by the Georgia Public Service Commission to raise rates.

With the aid of an $817,000 REA loan, the company plans an expansion and rehabilitation program and the new rates are to be effective when this program is completed.

The company serves 1,808 subscribers through exchanges at Blue Ridge and Lakewood and plans to offer extended area service between the two exchanges.

The commission said the rates it had approved were "at a level which our experience with similar-sized REA projects indicates will produce adequate revenues to assure an economically feasible project."

Present, proposed, and approved rates are as follows:

	Present	*Proposed*	*Approved*
Business:			
One-party	$4.75	$7.75	$6.50
Two-party	3.75	6.50	5.25
Four-party	2.75	5.50	4.25
Rural	3.50*	5.50	5.00
Residence:			
One-party	3.00	4.75	4.00
Two-party	2.50	4.00	3.25
Four-party	2.00	3.25	2.75
Rural	2.50*	4.25	4.00

*Subject to 25 cent charge for each two miles or fraction thereof beyond base rate area.

•

Also in Georgia, the commission on Mar. 10 was to rehear the petition of the Douglas Telephone Co. on the handling of toll service at the Douglas exchange.

The commission on Feb. 9 had denied the company's request for a rate increase and to operate Douglas as a toll center. For this purpose, the company had installed a complete toll switchboard and hired operators.

The company, which is in the process of converting from common battery to dial operation, presently handles its toll traffic on a ring-down basis through

Convention Calendar

1960

Association	*Date*	*City*	*Hotel*
Ohio	Mar. 29 and 30	Columbus	Deshler Hilton
Iowa	Apr. 5 and 6	Des Moines	Ft. Des Moines
Nebraska	Apr. 19 and 20	Omaha	Sheraton-Fontenelle
Indiana	May 4 and 5	Indianapolis	Claypool
Wisconsin	May 10 and 11	Milwaukee	Plankinton House
Illinois	May 19 and 20	Springfield	Abraham Lincoln
Kansas-Missouri*	May 23 and 24	Kansas City	Town House
Pennsylvania	June 6 and 7	Bedford Springs	Bedford Springs
California	June 8, 9 and 10	San Francisco	Fairmont
Washington-Oregon*	June 16 and 17	Portland	Sheraton Portland
New York	June 20, 21 and 22	Schroon Lake	Scaroon Manor
Tennessee	Sept. 7 and 8	Nashville	Hermitage
Arkansas	Sept. 12 and 13	Hot Springs	Velda Rose Motel
Michigan	Sept. 12 and 13	Mackinac Island	Grand
Rocky Mountain	Sept. 14, 15 and 16	Denver	Hilton
Nevada	Sept. 21, 22 and 23	Ely	Nevada
New England	Sept. 25, 26, 27 and 28	Bretton Woods, N. H.	Mt. Washington
North Carolina	Oct. 3 and 4	Pinehurst	Carolina
USITA	Oct. 9, 10, 11 and 12	Chicago	Conrad Hilton
South Carolina	Oct. 24 and 25	Clemson	Clemson House
Virginia	Oct. 27 and 28	Roanoke	Roanoke
Oklahoma	Nov. 9 and 10	Oklahoma City	Skirvin
Georgia	Nov. 9 and 10	Atlanta	Biltmore
Alabama	Nov. 14 and 15	Birmingham	Thomas Jefferson
Florida	Nov. 28 and 29	Jacksonville	Robert Meyer

*Joint Convention

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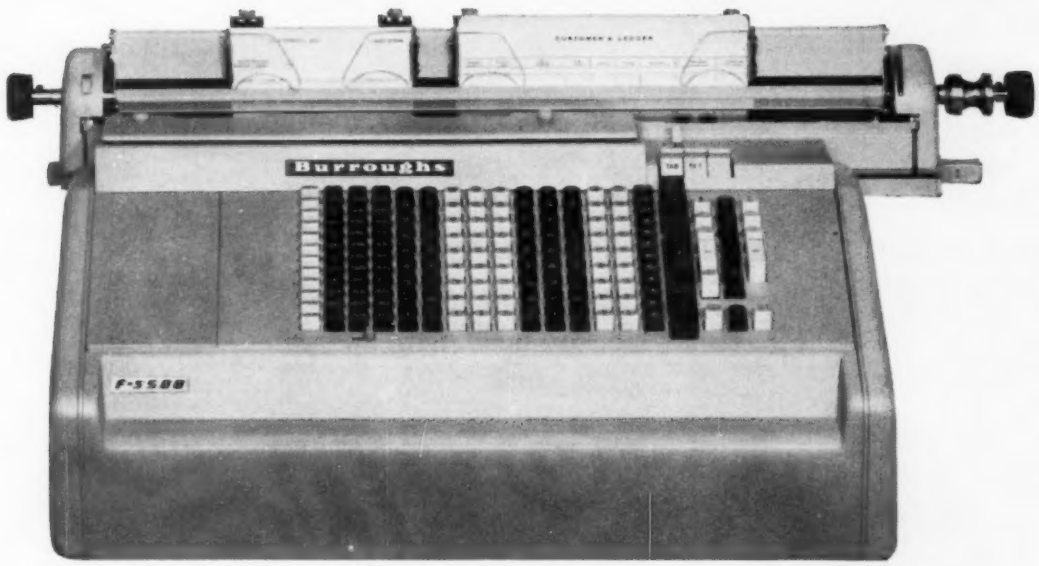

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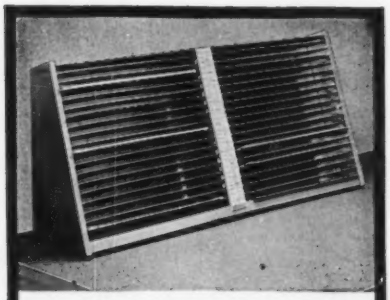


Trouble Recorder Card Rack

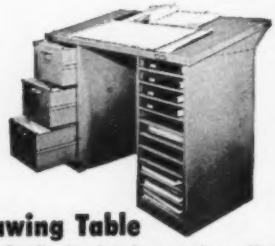
For fast orderly sorting of Trouble-Recorder cards, has 38 card slots in two banks with index strip between. Base is 38" by 8". Height 15". No. D30225-1.

Telephone Office Equipment

to lighten your work and improve efficiency

Work Bench

For repair, assembly, test and paper work. Top drawer divided into 24 compartments for parts and tools. Large file drawers are for circuit drawings. 54" x 25" top covered with masonite. Height 36". Drawers may be inserted from back to reverse position of kneehole. No. D29978-3.



Drawing Table

For circuit drawing in crossbar offices, provides central location for reference material. Masonite top is 30" x 60". Height 36" at front, 42" at rear. Three large file drawers at left for drawings. Eleven shelves at right are 2½" high, 14" wide, 18" deep for sketches, sequence charts, book type SD sheets, trunk serials, etc. No. D30326-1.

Color of all units: Baked-on gray enamel unless otherwise specified.

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the Waycross toll center of Southern Bell Telephone & Telegraph Co.

The commission had ruled that Douglas should be operated as a tributary of the Waycross toll center, and that a rate increase then would no longer be necessary since charges incident to the operator service required under the present ring-down basis would be eliminated. This would provide the company with net earnings almost identical with those the company has claimed to be reasonable, the commission said.

Operating revenues presently are $204,400, and total operating expenses, $186,100, giving the company net operating revenues of $18,300. If operated as a tributary of the Waycross toll center, total operating revenues would be $197,842, which with expenses of $150,188 would give the company net operating revenues of $39,141 after taxes.

If Douglas were to be a toll center, total operating revenues would be $248,364; expenses, $195,899; giving the company net operating revenues after taxes of $41,376.

The commission determined that the company's present rates with Douglas as a tributary would give it a 7.3 per cent return on a rate base of $556,400 which eliminates the toll switchboard which would no longer be required.

Present rates and those denied are as follows:

	Present	*Denied*
Business:		
One-party	$6.25	$8.40
Two-party	5.00	7.40
Four-party	4.00	6.40
Rural	4.00	5.40
Residence:		
One-party	4.00	5.20
Two-party	3.25	4.45
Four-party	2.75	3.70
Rural	3.00	4.20

Commissioner Walter R. McDonald dissented from the majority opinion as follows:

"The action of the commission in the outright denial of the application of the Douglas Telephone Co. and its order issued thereon is of necessity predicated upon a finding of inefficient management, if not gross mismanagement, which finding is not supported by the record.

"For many years telephone subscribers at Douglas complained of their inadequate long distance telephone service which was handled through the Southern Bell toll board at Waycross, and, which they felt, was due to the inattention given by Southern Bell employes to the Douglas toll calls.

"To correct this service deficiency the company has expanded its toll board facilities to the extent that it now employs 14 toll operators which has been necessary in the judgment of management to correct this service deficiency.

"Furthermore, the action of the commission disregards the company's investment in toll facilities, although these facilities will be necessary and required to provide Douglas subscribers with Direct Distance Dialing, which type of service is rapidly being provided to all communities."

Grant $50,791 Rate Raise To Ohio Company

The Bucyrus Telephone Co. on Mar. 2 was granted a $50,791 rate increase by the Ohio Public Utilities Commission (TELEPHONY, Oct. 17, 1959).

The company had asked for $79,759.80 in higher rates.

The increase will affect 6,504 subscribers in the Bucyrus, Chatfield and New Winchester exchanges.

Former, proposed and approved rates are as follows:

	Former	*Proposed*	*Approved*
Business:			
One-party	$9.00	$12.00	$11.00
Two-party	7.75	9.50	8.50
Ten-party rural	7.25	9.00	8.00
Residence:			
One-party	5.00	6.50	6.00
Five-party	3.75	4.50	4.15
Ten-party rural	3.00	3.75	3.45

Co-op Gets Rate Approval; OK Bell Sale in S. D.

The West River Cooperative Telephone Co. has been authorized by the South Dakota Public Utilities Commission to raise rates.

New rates are as follows:

Business	$12.00
One-party residence	8.25
Two-party residence	7.50
Four-party residence	7.00

•

The commission also approved the sale of the Hermosa Telephone Co. to the Northwestern Bell Telephone Co. The Hermosa company's area includes Custer State Park.

Idaho Company Requests Permission to Raise Rates

The Idaho Public Utilities Commission on Mar. 4 has scheduled a hearing for Mar. 29 on the rate request of the Carey Telephone Co.

The Carey company seeks to increase its annual revenue by $2,750.

The charge for one-party business service would increase from $5.50 to $7.50 under the proposed rates.

Ask Sale in Wisconsin

The joint applications of the Horseshoe Telephone Co. to sell and of the Wisconsin Telephone Co. to buy, its lines and apply Kewaunee rates to the acquired subscribers was to have been

BAKELITE BRAND High-Density Polyethylene DGD-4100

HERE IS A HIGH-DENSITY POLYETHYLENE that has superior insulating and jacketing properties offering outstanding advantages for telephone singles and for jacketing in many communications applications.

BAKELITE Brand high-density polyethylene DGD-4100 shows superior resistance to environmental and thermal stress cracking. It also has greater resistance to deformation at high temperatures. Both these properties are important for insulation on telephone cable singles. As a jacketing material DGD-4100 will withstand considerable physical abuse. For example, it survived 1.5 million cycles in standard IPCEA tree wire tests—50% better than other high-density polyethylenes tested! It meets REA specifications for rural C wire and military specification MIL-C-55036 for telephone singles.

And along with these properties, it shows improved toughness and shear strength without sacrifice of such familiar polyethylene advantages as light weight, weather resistance, excellent insulating properties, and ease of handling.

Wire and cable insulated or jacketed with high-density polyethylene DGD-4100 can mean maximum reliability of transmission systems. For additional information and samples, write Dept. CT-41H, Union Carbide Plastics Company, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y. *In Canada:* Union Carbide Canada Limited, Toronto 7.

TYPICAL PROPERTIES "BAKELITE" DGD-4100 BLACK 9845

Properties	ASTM Test	Typical Value
Melt Index @ 44 psi (gms/10 min)	D 1238	0.2
Density	D 1505	0.957
Tensile Strength, psi	D 412	3400
Per Cent Elongation	D 412	250
Durometer Hardness, Shore Type "D"	D 676	58
Brittleness Temp., °C.	D 746	-95
Shear Strength, psi	D 732	3000
Stiffness in Torsion, @ 23°C., psi	D 1043	100,000
Tree Wire Abrasion Test (1)		
50% Abraded (Cycles)		800,000 ca.
100% Abraded (Cycles)		1,500,000 ca.
Environmental Stress Cracking, F_{50}, hrs.	D 1693 (2)	500
Thermal Embrittlement Resistance, hrs. @ 70°C., F_0	(3)	5000
Deformation at 110 deg. C., per cent	(4)	0
Dielectric Constant	D 1531	2.65
Dissipation Factor	D 1531	.004
Dielectric Strength, Short Time, volts/mil	D 149	580

(1) IPCEA Tree Wire Test—S1981
(2) Samples previously aged 7 days @ 70°C.
(3) Standard U/L Heat Shock Test—1/32" insulation on #14 AWG solid copper conductor wrapped around its own diameter.
(4) UCPC Method WC 75 B/3—1/32" wall on #14 AWG wire. Test terminated at 5000 hrs.

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FOR 35 YEARS

heard by the Wisconsin Public Service Commission on Mar. 17.

Stock Transfer Merges Ga. Company with General of SE

The General Telephone Co. of the Southeast, Durham, on Feb. 17 was given financing approval by the North Carolina Utilities Commission to issue:

(1) $259,000 in first mortgage bonds.

(2) 29,500 shares of stock at $10 per share.

These will be exchanged for a like amount of 5 per cent bonds and 650 shares of common stock in the Milledgeville (Ga.) Telephone & Telegraph Co.

Through this exchange, General will acquire the Milledgeville company's property which, according to H. E. Hussey, General of the Southeast's president, will then be merged into the General company.

The exchange serves 4,443 stations and will be operated as part of General's Georgia division. Supervising this division is vice president and Georgia manager John C. Cozart. Wallace E. Jones Jr. will continue as manager at Milledgeville.

General of the Southeast has operated the Milledgeville exchange since acquiring control of the company in November, 1957.

•

The General company was also allowed to issue 3 million dollars worth of first mortgage bonds at 5¾ per cent.

Authorize Sale in Minn.

Lena Hamilton, owner of the Ghent Telephone Co. received approval on Mar. 7 from the Minnesota Railroad & Warehouse Commission to sell the property to the Ghent Telephone Co., Inc. The Ghent Telephone Co. serves approximately 208 stations.

Ask Sale OK in Arkansas

The Arkansas Public Service Commission on Mar. 14 was to have heard the application of Leone Thomas to sell the Standard Telephone Co., Marshall, to the Allied Telephone Co., Little Rock. The Standard company also serves Leslie.

Ask Rate Raise in Illinois

The Mt. Pulaski Telephone & Electric Co. has petitioned the Illinois Commerce Commission for a rate increase, it was reported on Mar. 1. Communities affected would be Chestnut, Latham and Mt. Pulaski.

Approve Sale in Illinois

The Illinois Commerce Commission has authorized the Midland Telephone Co., Champaign, to purchase the Pocahontas Telephone Co. (TELEPHONY, Oct. 17, 1959).

Nebraska Company Seeks $6,390 Rate Increase

A hearing date of Apr. 7 has been scheduled by the Nebraska Railway Commission on the application of the Bassett-Springview Telephone Co. for a rate raise at Bassett.

The company asked for increases amounting to $6,390, of which 80 per cent would go for wage increases and benefits.

Retail Resolution in Neb. Urges End Telephone Tax

The Nebraska Telephone Association, in its March, 1960 *Newsletter*, reported that that state's Federation of Retail Associations has unanimously adopted a resolution urging the end of the federal excise tax on telephone service.

The Nebraska Railway Commission on Feb. 26 adopted a resolution urging Congress to "permit the tax on local telephone service to terminate June 30, and to repeal taxes on all communications services at the earliest practical time" (TELEPHONY, Mar. 12).

The Nebraska merchants' association, representing 15,000 retail merchants, asserted its long opposition to the imposition of federal excise taxes on essential goods and services.

The merchants, in their resolution, called on Congress "to keep faith with the American people and honor its promise to permit this unfair and discriminatory tax on local telephone service to terminate on June 30, 1960."

The retail association asked that the "utmost consideration also be given to the termination of the federal excise tax on long distance telephone service without delay."

ITU to Become Independent Agency of the U.N.

At a recent conference in Geneva, Switzerland, at which more than 100 nations were represented, it was decided that the International Telecommunications Union would become an independent agency of the United Nations.

Reporting on the two-month meeting, the Uganda (East Africa) *Argus* said the agency would concentrate on technical assistance for new and developing countries.

M. W. Manson, assistant postmaster general of the East African Posts & Telecommunications Administration, said, "The union will advise on the best methods of developing communications in countries such as East Africa and will supervise the expenditure of any money granted for that aim by the United Nations."

He continued, "More funds will be made available to such countries than

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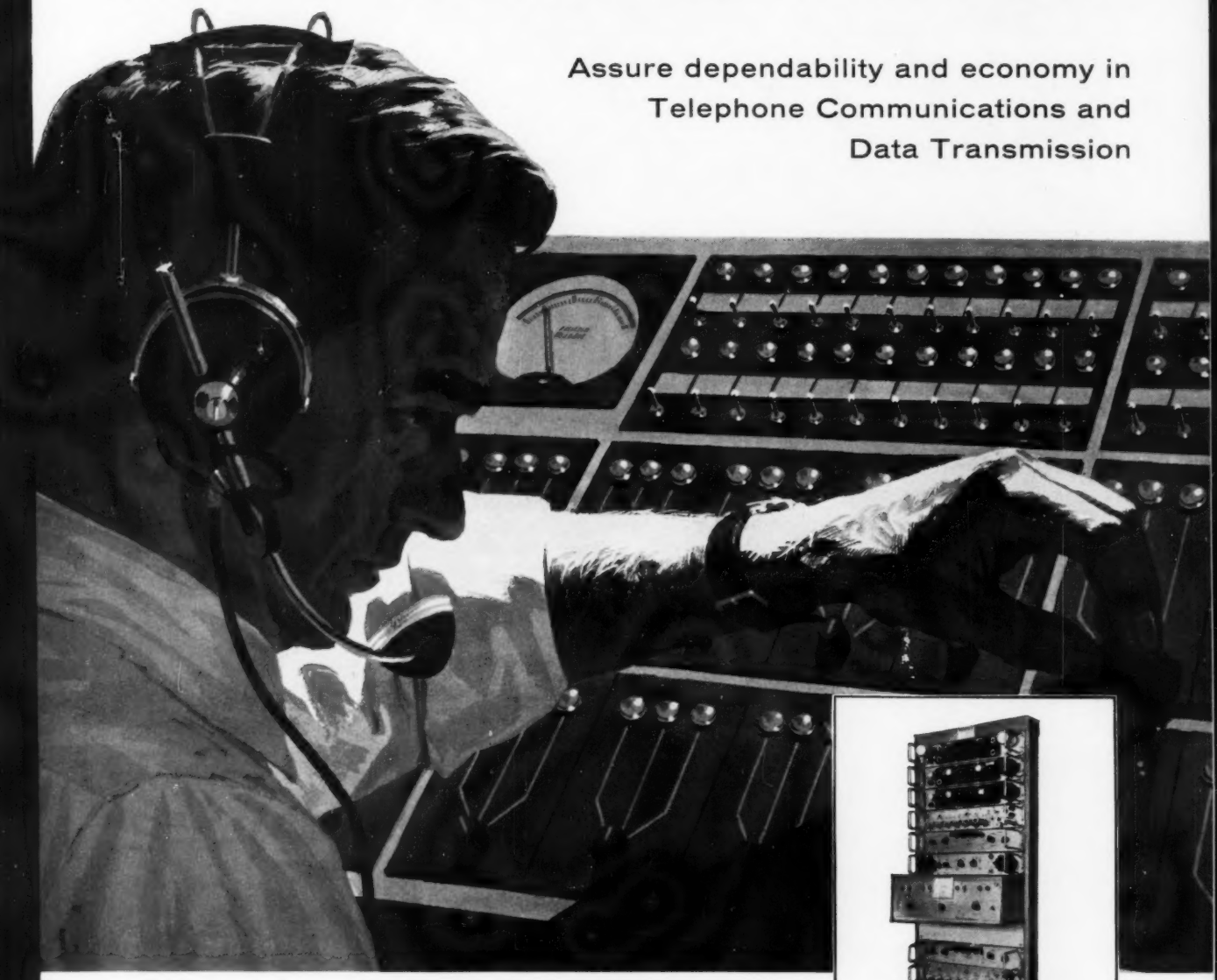
COMMUNICATIONS SYSTEMS

Assure dependability and economy in
Telephone Communications and
Data Transmission



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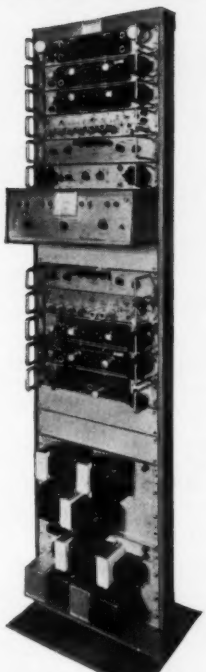

Philco CLR-9 Microwave Relay . . . with 240 voice channel capacity. Available in Common Carrier, Industrial and Government bands.

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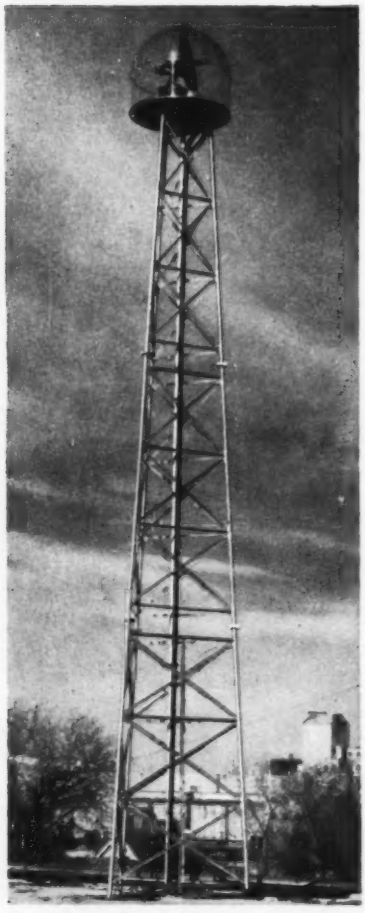

(This radar weather tower of KSTP-TV, Minneapolis, uses the 3 lower sections of the ROHN "Self-Supporting" tower. Note construction, design and size.)

HERE ARE THE HIGHLIGHTS OF THE ROHN "SS" TOWER:

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★ Rated a true HEAVY-DUTY steel tower, suitable for communication purposes, such as radio, telephone, broadcasting, etc.

★ Complete hot-dipped galvanizing after fabrication.

★ Low in cost—does your job with BIG savings—yet has excellent construction and unexcelled design! Easily shipped and quickly installed.

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has been the case in the past, because there is a growing realization that a country cannot develop properly, or make the best use of the money spent on agriculture, health, and other fields, without properly developed telecommunications. . . .

"All the information and results from study groups and experiments will be made available to administrations all over the world, under the new scheme of a consolidated budget whereby each administration will share in the expense."

AT&T and Japanese To Set Hawaii-Japan Cable Plans

The Communications Industries Division, Business & Defense Services Administration reported on Mar. 7 that the American Telephone & Telegraph Co. has invited a Japanese team to visit the United States to complete negotiations and study technical problems relative to laying the Hawaii-to-Japan cable (TELEPHONY, Aug. 15, 1959).

Such problems as the route to be taken by the cable, plans for an underseas survey, procurement of construction materials, patent rights, and provision for financing will be discussed.

At present, tentative plans call for the laying of a single-two-way coaxial cable, to cost approximately 55.6 million dollars, with 100 telephone circuits between Hawaii and Tokyo, at the same time the number of circuits between Hawaii and the U. S. West Coast is increased from 36 to 84.

The time for completion of the cable hoped for by the Japanese company, Kokusai Denshin Denwa K. K., is 1964, the date of the next Olympic Games, which will be held in Japan.

Obituaries

WILLIAM CARMI JOHNSTON, 61, secretary-treasurer of the Mooresville (N. C.) Telephone Co. died Mar. 5.

Surviving are his wife; a son, Eugene Reed, of Mooresville; a daughter; two brothers, and four sisters.

•

We recently learned of the death of EDWIN F. SCHULZ, long associated with the National Carbon Co.'s telephone battery division. Mr. Schulz, 57, died of a heart attack.

He had served for 15 years with National Carbon in Chicago, and for 22 years with the company in New York.

Mr. Schulz had held various positions with the company, including those of telephone specialist, radio sales engineer, industrial salesman, technical representative, and senior staff assistant for the battery products division.

Surviving him are his wife, May S., of Pleasantville, N. Y.; two sons, Edwin F. Jr., of Columbus, O.; and Richard H., of Cleveland, O.; two brothers, Louis P., Evanston, Ill., and Wm. J., Edina, Minn., and three grandchildren.

•

HOWARD O. LEINARD, 77, retired American Telephone & Telegraph Co. assistant vice president, died on Mar. 7.

H. O. LEINARD

Beginning his telephone career in 1906, he was general manager of the Ohio State Telephone Co. at the time of its unification with Ohio Bell Telephone Co. in 1921. He joined the staff of AT&T in 1922.

Mr. Leinard served as assistant to AT&T's vice president concerned with Bell System relations with Independent companies and telephone associations until he retired in 1946.

He was a member of the Telephone Pioneers of America, Kingsbury Chapter No. 2; and of the Independent Telephone Pioneer Association.

Army Signal Corps to Hold Symposium on Static Relays

A symposium on the new field of static relays—devices which perform relay-like switching operations without moving parts—will be held at the U. S. Army Signal Research & Development Laboratory, Fort Monmouth, N. J., on Apr. 12 and 13.

The symposium is sponsored by the laboratory's electronic components research department, which announced that the sessions "will be devoted to the consideration of the many factors affecting the design, evaluation and use of (this) new family of components."

Static relays are defined by the department as "integral, versatile 'on-off' electronic circuit control devices . . .

capable of performing 'relay-like' switching functions without the use of moving parts.

"Typically, static relays may employ semi-conductors, saturable reactors, electro-optical elements, in appropriate circuitry to accomplish switching in electrical configurations comparable to those of conventional electromechanical devices."

In charge of arrangements for the symposium is William J. Fontana, Electronic Components Research Department, USASRDL, Fort Monmouth, N. J.

N. C. Independent Reports '59 Gains to Stockholders

"In many respects 1959 was a record year for the Carolina Telephone & Telegraph Co.," president H. Dail Holderness said on Mar. 11 at the company's annual meeting of stockholders.

"Records were established in the number of telephones gained in a single year, the number of long distance messages handled, and in sales recorded in our merchandising program," Mr. Holderness pointed out.

In 1959 Carolina Telephone & Telegraph, Tarboro, N. C., gained 16,444 telephones, far exceeding the previous record of 12,304 set in 1956, and bringing the total telephones in service to 179,953.

During the year, the company completed nearly 1½ million long distance calls to surpass the 1958 record by about 9 per cent.

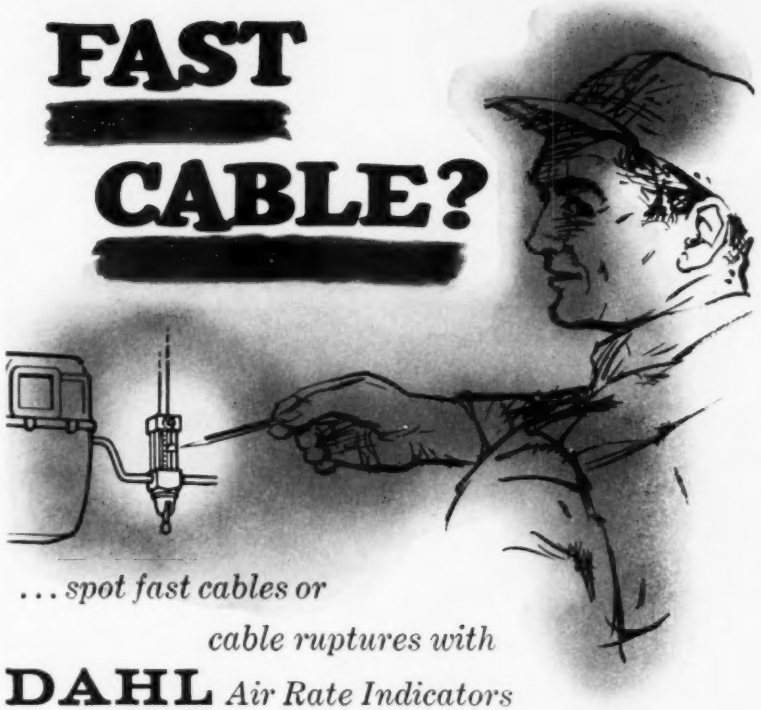
Mr. Holderness reported that employes of the company had established an all-time record in merchandising with sales which will produce more than one-and-one-half million dollars on an annual basis.

The president emphasized that Carolina Telephone has continued its long range plans to provide the most modern possible telephone service and now has 66 of its 111 exchanges equipped with the nationwide numbering plan. Present plans call for the conversion of additional exchanges to this universal numbering system in 1960 and future years, until all exchanges have this numbering scheme.

Direct Distance Dialing was established in nine exchanges during 1959, bringing the total having this service to 27. Other exchanges are to be converted to this subscriber dialing long distance service in 1960.

Expenditures for expansion and improvement of telephone plant amounted to about $7,350,000 in 1959. It is anticipated that such expenditures will reach $8,500,000, or more in 1960.

During 1959, Carolina Telephone



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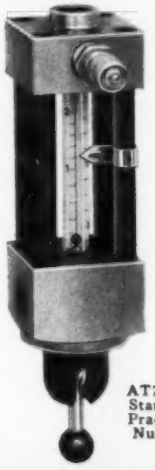

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5. Complete with Pressure test valve and cap (AT 6419) — factory tested
6. All metal connections — ⅛" IPS

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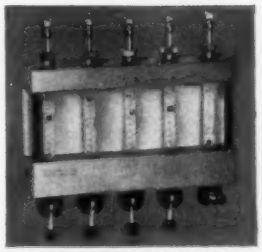

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split its capital stock on a five-for-one basis; earned $1.89 per outstanding share; and paid dividends totaling $1.60 per share, based on the shares outstanding after the five-for-one split.

Hold Classes in Research For General Co. of Cal.

Recently, according to A. G. Evanoff, director, the operations research department of the General Telephone Co. of California took a long, hard look at some of the scientific research methods being applied to problems, ranging from how to select proper applicants for jobs to computing operations costs.

Instructors from Sylvania Electric Products Inc., a General Telephone & Electronics Inc. subsidiary, arrived early in January to begin an intensive orientation program of the entire staff of the operations research department of the California company. Other departments within the company were also invited to participate.

The classes, given three times a week, were extended over a six-week period.

More than 15 topics were included in the instruction program. Some which were given are *Weighting the Objective* (how to choose and administer research projects according to their potential importance to the company); *Formulating the Problem* (how to arrive at the basic need to be solved by research); and *Analytic and Numerical Solutions* (what type of approach to use in triggering the research needed to solve the problem).

"*Monte Carlo Procedures* (mathematically proven probabilities of certain reactions, received when research is applied to a given situation); *Inventory Models* (results of past experience in research which can be applied to new problems); *Linear Programming* (use of computer equipment in research); *Theory of Games* (techniques used in developing theories to be proved through research); and *Computer Systems* (capabilities of computers and how to utilize them fully in research) are other topics currently under discussion," Mr. Evanoff said.

Book Reviews

"101 WAYS TO USE YOUR SWEEP GENERATOR," by Robert Middleton: 138 pages, illustrated. $2.00.

A sweep generator is a type of signal generator or oscillator which delivers a frequency modulated output. Thus, while a regular signal generator delivers the frequency to which it is set, a sweep generator gives a frequency which is constantly swinging above and below the nominal setting. This feature, coupled with an oscilloscope, can tell you a great deal about the electronic circuit under test.

This is a "how-to-do-it" rather than a theory book, but it is directed primarily to television and radio repair. There is some interest here for telephone companies which have radio installations. You can purchase this book from TELEPHONY.

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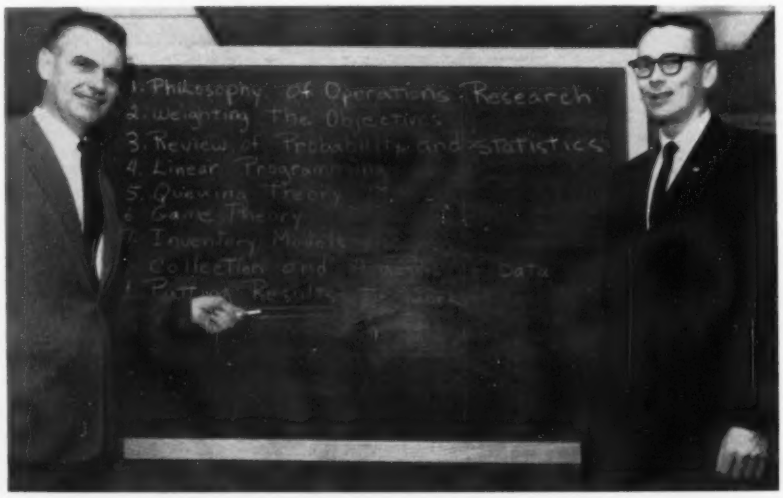
"A-C CIRCUIT ANALYSIS," edited by A. Schure. 104 pages. $1.80.

Another of the Electronic Technology Series, this book explains the principles of alternating current, and how it be-



Alex G. Evanoff, left, director of operations research, General Telephone Co. of California, points out to Donald J. Pearson, the assistant director, some of the subjects to be covered in orientation program on research methods. Mr. Evanoff underscores "Getting Results to Work," purpose of instruction program being conducted by Sylvania Electric Products Inc., GT&E subsidiary.

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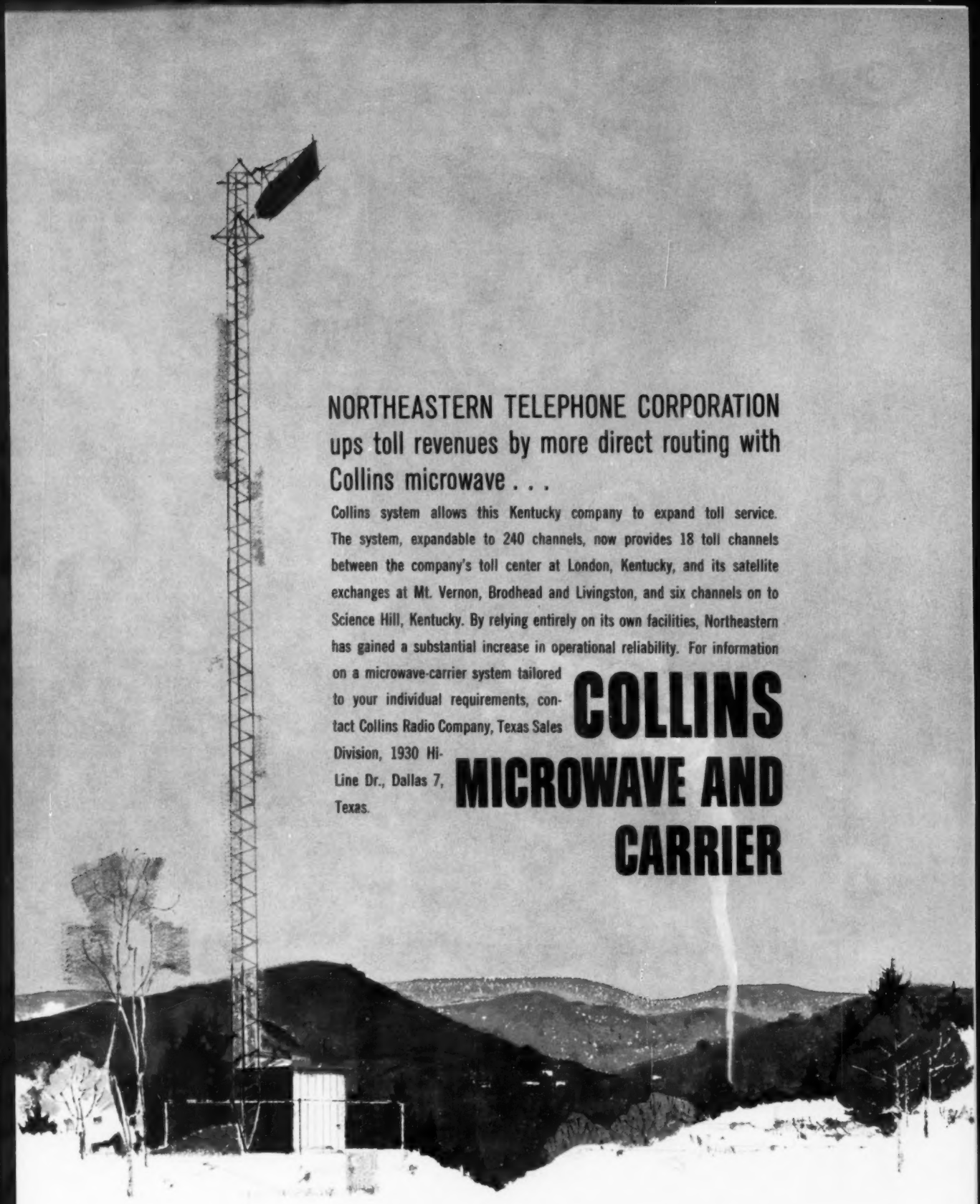

NORTHEASTERN TELEPHONE CORPORATION ups toll revenues by more direct routing with Collins microwave . . .

Collins system allows this Kentucky company to expand toll service. The system, expandable to 240 channels, now provides 18 toll channels between the company's toll center at London, Kentucky, and its satellite exchanges at Mt. Vernon, Brodhead and Livingston, and six channels on to Science Hill, Kentucky. By relying entirely on its own facilities, Northeastern has gained a substantial increase in operational reliability. For information on a microwave-carrier system tailored to your individual requirements, contact Collins Radio Company, Texas Sales Division, 1930 Hi-Line Dr., Dallas 7, Texas.

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haves in different kinds of circuits and components.

Written at an intermediate level, it can be recommended for the technician who finds himself on the fringes of engineering. Because alternating current and voltage are the building blocks of communications and electronics, this book is a good one for the telephone man who wants to know some of the science behind electronic circuits. Lots of mathematics here, but not beyond algebra and trigonometry.

This book can be ordered from TELEPHONY.

REA Approves Allocation Of Five Telephone Loans

NEW or improved telephone service with the help of five loans approved by the Rural Electrification Administration is in prospect for 6,541 subscribers in six states. Approximately 40 per cent of these subscribers will receive telephone service for the first time. Details follow:

Bloomingdale (Ind.) Home Telephone Co.; $239,000; Feb. 25.

This new REA borrower serves 291 subscribers through one dial central office at Bloomingdale. The borrower plans to acquire the facilities of the Citizens Telephone Co., which is adjacent to the Bloomingdale exchange. The Citizens Telephone Co. serves 145 subscribers in and around the unincorporated town of Tangier. The acquired system will be converted to dial operation and expanded. In addition to improved service for Citizens' present subscribers, the loan will finance initial service for 33 subscribers in the Tangier area and 26 subscribers in the Bloomingdale area. The Tangier area will be served by the Bloomingdale exchange.

A portion of this loan will refinance the borrower's indebtedness.

Toll and operator office services for the borrower will continue to be handled at the Clinton exchange of the Indiana Bell Telephone Co. It is planned to continue extended area service between the Bloomingdale company's exchange and Indiana Bell's exchanges at Marshall, Rockville, and Montezuma. Additional extended area service will be established at Kingman.

Delmas Davis is president and Charles Cure is manager of the Bloomingdale Home Telephone Co.

•

The Iowa-Illinois Telephone Co., New London, Ia.; $2,342,000; Mar. 1. This loan will help improve telephone service for 3,368 existing subscribers, and provide service to 542 new subscribers through the acquisition of telephone facilities in Iowa and North Dakota.

The loan will also finance the borrower's acquisition, from the Northwestern Bell Telephone Co., of exchanges located at Fonda, Newell, Peterson, Rembrandt and Wapello, Ia.

In addition, the loan will enable the borrower to acquire the facilities of the following three companies: Farmers Mutual Telephone Co., Starkweather, N. D.; the Sheyenne Telephone Co., Warwick, N. D.; and the Farmers Mutual Telephone Co., Yarmouth, Ia. These companies provide service to 365 of the existing subscribers. The balance are served through the exchanges acquired from Northwestern Bell.

New dial central offices will be constructed at Starkweather and Warwick. Dial service will be provided to subscribers in the Yarmouth exchange through the borrower's existing exchange at Mount Union. Dial facilities at the other exchanges will be improved and expanded.

REA loans to the Iowa-Illinois Telephone Co. now total $8,009,000. The completed system will consist of 40 dial exchanges providing service to 20,142 subscribers in 24 Iowa counties and five North Dakota counties. Thirty-four of the exchanges are in operation, providing service to approximately 16,232 of the subscribers.

•

The Southwest Dial, Inc., (mailing address, Gardner, Kan.); $415,000; Mar. 2. This loan will help improve service for 404 existing subscribers and furnish initial service to 427 subscribers.

The existing subscribers now receive common battery and magneto service from the Golden City (Mo.) Telephone Co., which the borrower proposes to acquire. The company plans to construct a new dial central office at Golden City.

REA loans to the Southwest Dial now total $1,890,000. Upon completion of all construction provided for in the loans, the borrower will be serving 3,874 subscribers through dial exchanges at

Avilla, Sarcoxie, Cassville, Washburn, Exeter, Shell Knob and Golden City.

All of the borrower's facilities are located in Missouri.

•

The S & T Telephone Cooperative Association, Brewster, Kan.; $85,000; Mar. 4. This loan is intended to improve service for 46 existing subscribers and to provide initial service to 181 subscribers.

The loan will enable the borrower to acquire the facilities, excluding real estate, of the Farmers Mutual Telephone Co., Menlo. This company provides magneto service to the existing subscribers. A new dial central office will be constructed at Menlo.

REA loans to the borrower now total $934,000. Upon completion of all construction provided for in the loans, the company will be serving 1,353 subscribers. Five of the exchanges are now in operation providing service to 1,065 of the subscribers.

•

The Skagit Valley Telephone Co., Mount Vernon, Wash.; $783,000; Mar. 4. The loan will help provide dial telephone service to 1,369 new subscribers.

These funds will help enable the borrower to complete its authorized system, and construct a new headquarters building in Mount Vernon and four microwave installations. Four mobile-radio units and one base station will also be added to supplement the eight units now being used in system maintenance.

REA's loans to this borrower now total $2,695,000. When the planned construction is completed, the Skagit Valley Telephone Co. expects to be serving 8,698 subscribers through dial exchanges at Alger, Big Lake, Burlington, Concrete, Conway, Edison, LaConner, Lyman, Marble Mount, and Mount Vernon. All of these exchanges are now in operation.

G. J. Stover is president and manager of the Skagit Valley company.

Schedule Marine Radio Meet

The Radio Technical Commission for Marine Services will hold its spring assembly meeting at the Willard Hotel, Washington, D. C., on Apr. 11, 12 and 13. The three half-day sessions will be devoted to technical papers on subjects such as recent domestic developments, effects of 1959 international conferences, and the relationship of international organizations to marine radio services.

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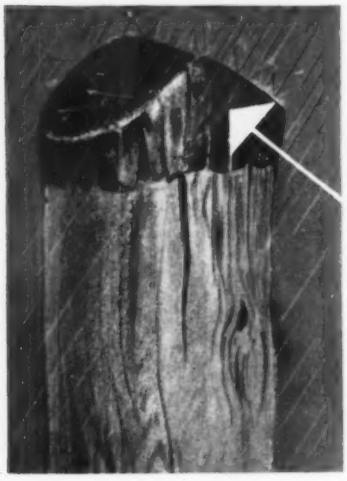

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PULSING PLUS

Continued from page 22

distant tester can apply permanent pulses to his carrier signaling jacks; if received all right he can suspect his dial or sender, or his trunk circuit. If the permanent pulses are bad, the intermediate office (B) can read the pulses off the carrier and if all right, read the pulses out of the pulse link repeater. He can also put good pulses on the line towards office (C). If the carrier and the pulse link repeater check out and known good pulses are coming towards office C, the tester in that office can suspect his CX equipment. He should first clean the contacts of the polar relay, then if necessary, current flow the relay and finally, readjust the fine adjustment resistor strapping.

Obviously, a means of reading the outpulsing from office A would be a big help in quickly determining whether the pulsing was leaving within requirements or not. This can be accomplished by patching from the SX IN jack of pulse repeating set to the M composite signaling lead.

Now, when you pulse over the circuit from the testboard, the outgoing pulses will register on the per cent break meter, but they will be reversed. A modification of the pulse repeating set utilizing the unused part of the PLS CHK key, and illustrated in *Fig. 3*, will reverse the meter and permit the reading of the outgoing pulses in the normal manner.

Actually the pulse repeating test set is not the ideal set to use. Due to the inherent dampening effect of the per cent break meter, there is about a 1 to 2 per cent error in the readings on bursts of pulses. Ordinarily, the MIN-MAX feature would be used to read dial pulses, but this feature only indicates whether the pulses lie within a present band, and does not conveniently indicate a figure from which a deviation can be taken. The pulses from a sender come too fast to operate the reset key, and trying to operate the reset key between dial pulses only complicates the test. In view of the extra advantages available with the pulse repeating set and the marked improvement in the standard deviation, it is perhaps best to learn to live with the error.

An electronic test set utilizing indicator tubes or a cathode ray scope would no doubt be more accurate and compact, but at the present time the pulse repeating set is available in most offices. Experiments with an oscillograph were abandoned when it was decided the set would be too awkward and delicate to be popular.

Analyzing the Readings

As the readings are taken off the per cent break meter, they can be recorded on a pulsing history card. This card contains such information as the circuit number, the date, the initial and final receive and send values and check blocks to indicate whether the auxiliary trunk circuit relay has been current flowed for premature releasing or sticking operated. The block containing the per cent break reading is split so that the deviation from 58 per cent can also be recorded.

This deviation can then be used on a standard statistical analysis form, commonly known as a stroke chart. This method of analysis is used at present on the deviations found in voice transmission tests.

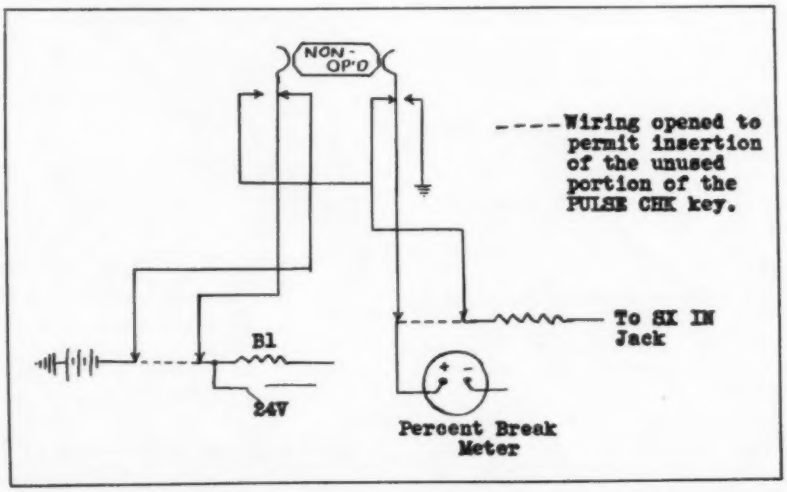
NON-OP'D
Wiring opened to permit insertion of the unused portion of the PULSE CHK key.
To SX IN Jack
B1
24V
Percent Break Meter

Fig. 3. Modification to pulse repeating set to permit reading office outpulsing.

The newer quality control charts are believed an improvement over the statistical analysis method. Part II of this series will describe the operation and application of the quality control method of analysis.

Either method will indicate which circuits require attention and will also provide a standard deviation or distribution grade figure. This figure, computed each time a complete test is made, is an indication of the quality of the pulsing on all the circuits tested. By comparing the standard deviation figures of previous tests with the latest test, it becomes readily apparent whether the circuits are improving, getting worse or remaining stationary. The computation of a distribution grade figure usually has a psychological effect on the craftsman responsible for the tests and records. Trying to improve on the previous quarters' distribution grade results in keener interest and job satisfaction.

The first standard deviation figure for pulsing tests was computed at 2.6, the latest figure, 0.84. Previous to the tests, the equipment was regularly routined and considered in top shape. Tests have been made every three months, but the circuits once set up properly, appear to be stable enough to extend the between tests period to six months. The latest test indicates our circuits are pulsing between 57 and 60 per cent, a much narrower limit than the company's over-all requirement of 54 to 64 per cent.

So, there it is, a test that can replace many of the laborious, expensive pulsing routines and yet keep an accurate check on the circuits' in-service pulsing ability and, as a bonus feature, built-in tests that represent a step towards reducing those traffic signaling failures.

General of NW Tells Major Officer, Other Changes

Major changes affecting eight officers, department heads and division managers of the General Telephone Co. of the Northwest have been announced by A. J. Barran, president.

In making the announcement, Mr. Barran reported the election of R. J. Whitekettle, former western division manager, Wenatchee, to the office of secretary and treasurer. He will assume the office which has been filled temporarily by R. F. Williams, who will now resume his position as director of public relations in Spokane on a full-time basis.

R. E. Joslin, vice president-revenue requirements, Spokane, will relinquish his additional duties as general commercial manager to George M. White,

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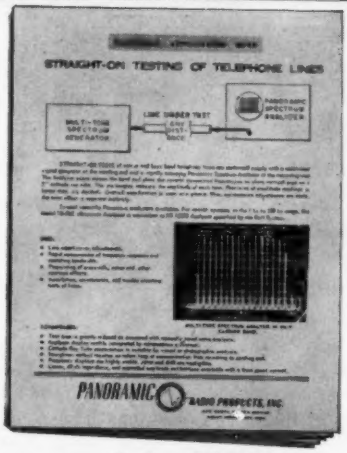

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Spokane, who will become manager of the commercial and traffic departments. Mr. White has been serving as special assistant to the president, Mr. Barran reported.

Walter A. Boro, general traffic manager for the company, has been promoted to the newly established position of executive assistant to the president.

Other changes reported by Barran included the promotion of W. Derek Brine, personnel supervisor, to the position of western division manager, Wenatchee, replacing R. J. Whitekettle.

Clarence C. Crow, building and extension engineer, Spokane, has been named to succeed Arthur Anell as the company's central division manager in the Richland-Kennewick area.

Mr. Anell has been assigned to the Spokane general office where he will serve as general supplies supervisor.

IN THE NATION'S CAPITAL

Continued from page 20

station to take over the master station if there is a part-system failure or "outage" (as they say in the gas utility business). Fault finding equipment tones are pressed directly on the base band to avoid interruption of carrier channels.

This writer's mention of this development is not intended to be critical at all. On the contrary, Columbia Gas has shown a good deal of enterprise in working out such an intra-communications setup to suit its own particular needs. But it does show the result of pressures which have been exerted on the FCC and other government areas to keep this business away from operating telephone companies. There have been intimations that the telephone industry was trying to foster a monopoly, in its own earlier efforts to promote direct control and participation in this kind of business on a broader scale.

Under prevailing law and practice, Columbia and any other large or small gas, electric, pipeline, or other utility business has a right to choose whether it wants to construct its own microwave setup, or turn over the business to the telephone company as the Union Electric Co. did in St. Louis.

One can foresee, however, that with the growth of these privately-owned industrial communication systems, some operating conflicts are building up to an eventual showdown. Here we have a growing mass of far-flung intra-system communications which will sooner or later press for direct connection with outside telephone company

facilities. The gas and oil prospector, wandering around the Southwest with a walkie-talkie, is now able to talk through system communications with the home office headquarters, hundreds of miles away. But, eventually, there will be pressure to have direct interconnection to route such calls to engineering experts in Boston or financial people in New York, or what have you. Already, we have seen this in the arguments over the Bell System filed tariffs for interconnection between railroad mobile telephone and telephone system facilities. This kind of argument is going to come up again and again.

The traditional position of the telephone industry has been to avoid interconnection of telephone facilities with other communication facilities not under its own control or operating responsibility. It has maintained this position as a prerequisite for preserving proper service standards. But, with the railroads beating on the door today, and the gas, electric, and other utilities tomorrow, the traditional policy of non interconnection with outside communication facilities is probably under siege already.

Newspaper columnists, radio and TV commentators, etc., are going to start asking why, if a taxicab driver can call headquarters to report his location and get call instructions, a taxicab passenger cannot call his wife to say that he will be late for dinner? There is an awkward situation developing here. As the late Major Bowes used to say "Where it will stop no one knows."

* * *

P.S. Want a cute twist slogan for selling kitchen wall telephones? You can have it here free: "This Invention Is the Necessity of Mother!" How did that come up? Well, we overheard an unwilling, but precocious, child recently revolting against a parental command that attending to a certain duty *immediately* was a necessity. "Sometimes I think," grumbled the young rebel, "that necessity is the invention of mother." So, we have turned a complete circle.

MST&T Announces Four Managerial Changes

Mountain States Telephone & Telegraph Co. has announced the appointments of three vice presidents and of its Wyoming Independent company relations manager.

James W. Heckman has been appointed vice president-revenue requirements. He began with MST&T in 1934, and has held various supervisory positions in the accounting departments at Denver and El Paso. In 1952, he became Idaho general manager, progressing to Idaho vice president in 1956. He was transferred from this position to New York City.

Harold A. Snyder was named Colorado vice president and general manager of MST&T.

Mr. Snyder began his telephone career in 1928 in Helena, Mont. Since then, he has held positions in Salt Lake City, Utah; Greely, Colo., and Phoenix, Ariz. He was Colorado-Wyoming accounting manager before being appointed Idaho vice president and general manager in 1958.

Succeeding him in Idaho is Robert V. Morris, Montana commercial manager.

Mr. Morris, a native of Denver, is a graduate of Stanford University. Starting in El Paso, Tex., in 1945 as a coin box collector, he moved up to manager, first at El Paso, then at Santa Fe, N. M.

In 1952 he moved to the Denver general offices, and, in 1956, became district traffic superintendent at Boulder, Colo.

He became district manager at Butte, Mont., in 1957, a post he held until July, 1959.

Howard H. Hembrey, new Wyoming Independent company relations manager, first joined MST&T in Grand Junction, Colo., as an office clerk in 1928. Seven years later, he became district cashier at Pueblo.

He went to Denver in 1940 as Colorado commercial results supervisor, being promoted in 1947 to district manager at El Paso, Tex. Prior to his current appointment, he had been Wyoming commercial supervisor at Cheyenne since 1953.

New Issue

This new issue of First Mortgage Bonds is being sold to the general public by a group of investment dealers, including the undersigned. The offering is made only by means of the official Prospectus.

▶ **$15,000,000**

General Telephone Company
of Florida

▶ **First Mortgage 5% Bonds, Series G**

Dated March 1, 1960 Due March 1, 1990

▶ **Price 99 1/4%**
(Plus accrued interest from March 1, 1960 to date of payment and delivery)

You are invited to ask for a Prospectus describing these Bonds and the Company's business. Any of the undersigned who can legally offer these Bonds in compliance with the securities laws of your state will be glad to give you a copy.

Paine, Webber, Jackson & Curtis — Stone & Webster Securities Corporation

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Hemphill, Noyes & Co. — Hornblower & Weeks — W. C. Langley & Co.

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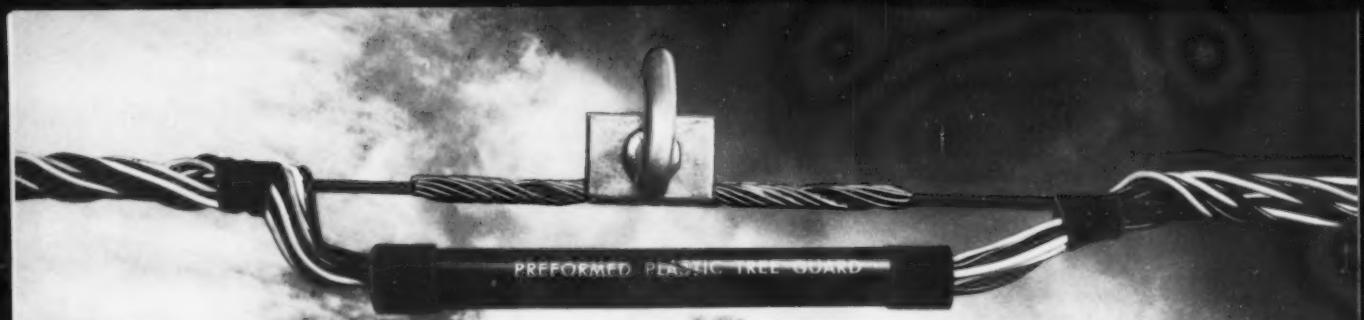
March 8, 1960



Use *Preformed*™ GRITTED ARMOR RODS (Adapters)

the new way to install service drops and splicing cases. Protective armor increases diameter of messenger to accommodate D Span Clamps or splice case attachments.

Money Saving For Rural

Use *Preformed*™ ALUMINUM ALLOY ARMOR RODS

with one-bolt clamp to avoid expensive J-Hook installations. Armor Rods protect insulated messenger from clamping stresses and increase holding power.

You can look up to ***Preformed***™

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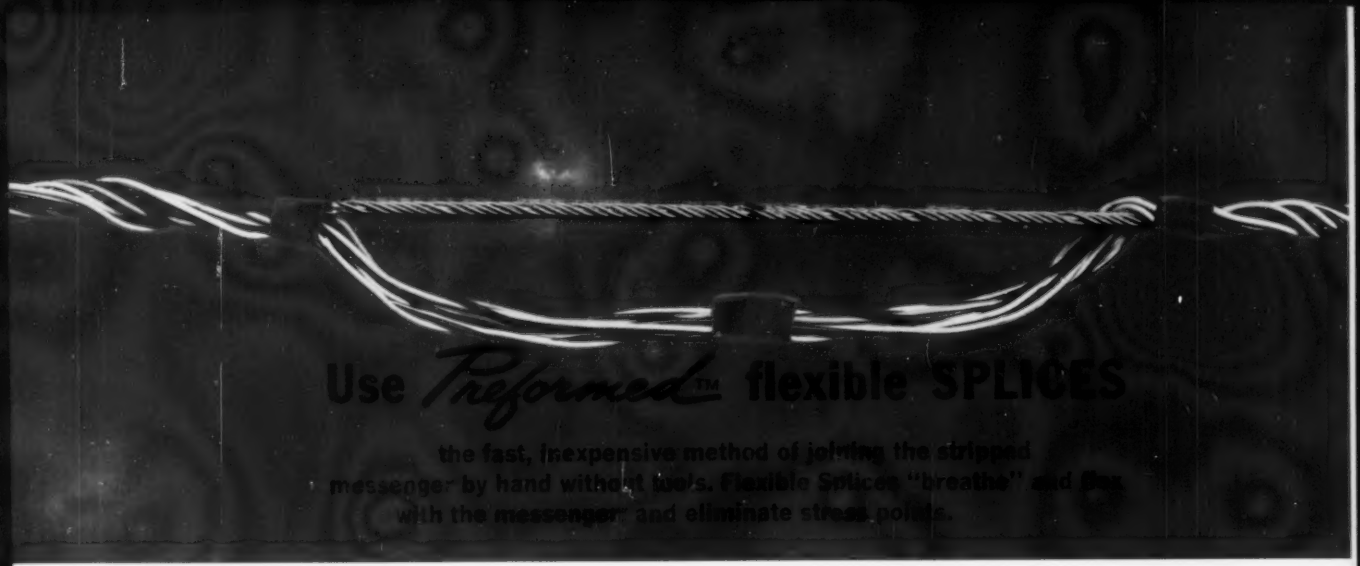
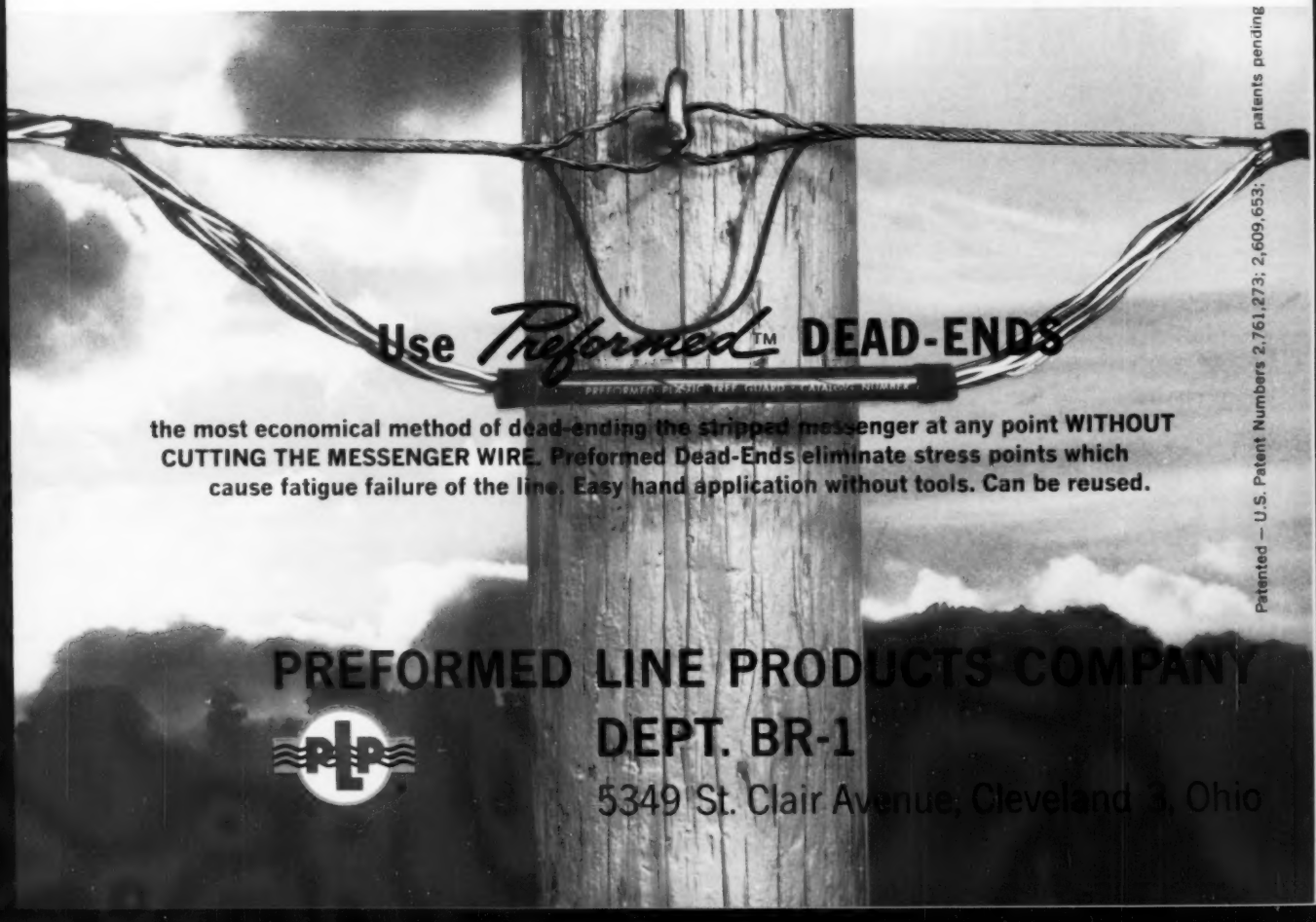
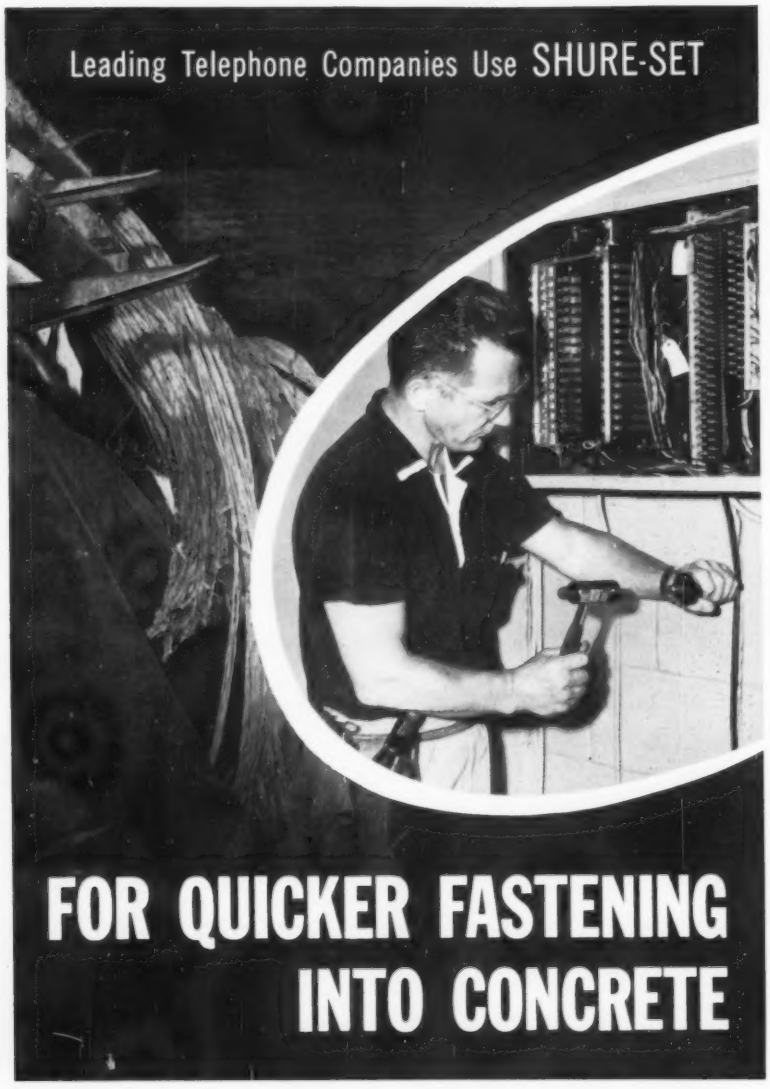
Preformed communications products are distributed by leading Local and National Telephone Suppliers


Use Preformed™ flexible SPLICES
the fast, inexpensive method of joining the stripped messenger by hand without tools. Flexible Splices "breathe" and flex with the messenger and eliminate stress points.

Attachments Distribution Wire


Use Preformed™ DEAD-ENDS
the most economical method of dead-ending the stripped messenger at any point WITHOUT CUTTING THE MESSENGER WIRE. Preformed Dead-Ends eliminate stress points which cause fatigue failure of the line. Easy hand application without tools. Can be reused.
Patented — U.S. Patent Numbers 2,761,273; 2,609,653; patents pending

PREFORMED LINE PRODUCTS COMPANY
DEPT. BR-1
5349 St. Clair Avenue, Cleveland 3, Ohio



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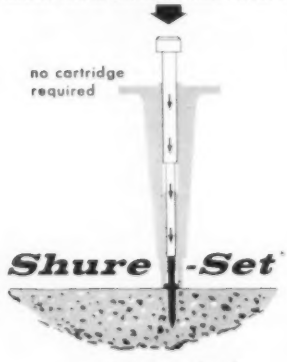

. . . another product by

To cut installation time and increase worker effectiveness, a special Shure-Set fastening tool is available for the telephone industry. This hammer-in tool sets austempered fasteners into concrete without pre-drilling or plugging . . . it also converts in seconds to an efficient drill holder for "twist and turn" work.

Shure-Set tools, threaded studs, drive pins and wire loop fasteners have been thoroughly tested and proved in the laboratory and on-the-job! Now Shure-Set has been adopted by many companies as the new standard for light fastening. Write for facts today on how Shure-Set can save you time and money!

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Stromberg Management Posts For Diamond and Anderson

Stromberg-Carlson announces two executive personnel changes—that of Edward Diamond, advanced to vice president and counsel, reported by company president James D. McLean; and Jack G. Anderson appointed vice president for government relations, told by Allan R. Shilts, vice president and general manager.

EDWARD DIAMOND

Mr. Diamond had been secretary and general counsel of the division since joining the company in April, 1959. He formerly was associate general counsel of the U. S. Atomic Energy Commission. He is the United States representative on an international panel on Civil Liability and State Responsibility for Nuclear Hazards. In this capacity, Mr. Diamond has participated in the drafting of a convention which is currently under consideration by the International Atomic Energy Authority.

Mr. Diamond is a native of New York City, and a graduate of the Brooklyn Law School of St. Lawrence University in the class of 1931.

He practiced law in New York for 10 years, and in 1941 joined the staff of the Manhattan Engineer District of the U. S. Army, serving at Oak Ridge, Tenn., throughout World War II.

In June, 1947, he became assistant general counsel at the Atomic Energy Commission's New York operations office. He joined the staff of the San Francisco operations office in a similar capacity in April, 1951.

In July, 1954, he was transferred to Washington as deputy general counsel, and in February, 1958, he became associate general counsel of the commission.

Mr. Anderson went to Stromberg-Carlson from Hoffman Electronics Corp. of Los Angeles, where he served as vice

J. G. ANDERSON

president for marketing. He had been with Hoffman since 1954, first as manager of Air Force operations and later as director of military marketing.

From 1942 to 1954 he served with the U. S. Air Force in many assignments throughout the United States, Europe, Africa and the Pacific. He was a major when discharged.

Mr. Anderson attended the University of Louisville and received a bachelor of science degree from the USAF Institute of Technology in Dayton, O.

He is a past president of the Dayton Wright Chapter of the Armed Forces Communications & Electronics Association and is a member of the American Rocket Society, the Institute of Radio Engineers, the Institute of Aeronautical Sciences, the Air Force Association, Air Traffic Control Association, and the American Ordnance Association.

McCormack Is Vice President, Sales for Bishop Mfg.

Frank X. McCormack has been named vice president of sales for the Bishop Mfg. Corp. and the Bishop Export Co., manufacturers of electrical insulating tapes and compounds, spot crown materials, and custom compounders and calenders.

Mr. McCormack joined the Bishop company in 1952 as sales engineer and became assistant sales manager in 1955.

In 1958, he was named sales manager in charge of the electrical insulating tape division.

He was graduated from Mount St. Mary's College, Emmitsburg, Md., in 1943 with a bachelor of science degree. He completed postgraduate work at Columbia University and Rutgers University.

He is a member of the American Institute of Electrical Engineers.

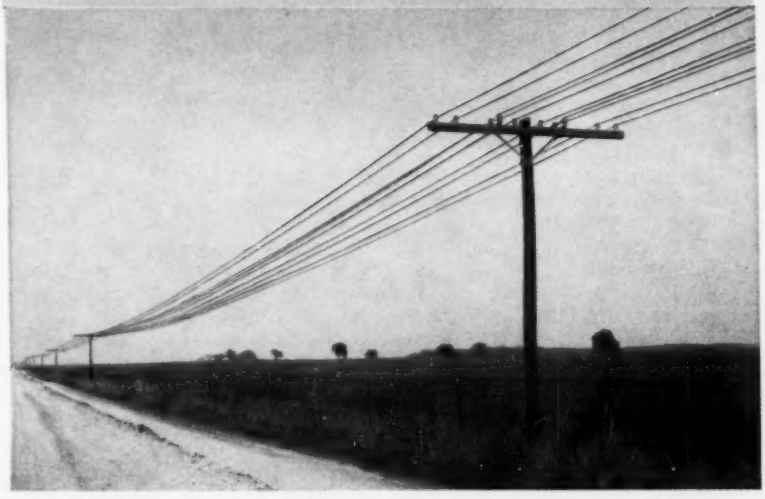
Crapo HTL-135

High Tensile Line Wire

MADE TO WITHSTAND HEAVY STORM LOADS

Time and time again, *Crapo* HTL-135 has demonstrated its ability to stand up under heavy ice and wind loads when other conductors failed. This can be attributed to the fact that *Crapo* HTL-135 combines high strength with high fatigue endurance plus superior elastic qualities which enable it to spring back into place when loads are removed. The result: service interruptions are minimized, re-sagging is seldom necessary, where this rugged telephone wire is used.

The excellent telephonic transmission characteristics of *Crapo* HTL-135 make practical subscriber loops of 14 to 15 miles with normal voltages and equipment. Longer loops are possible where higher voltages and more sensitive telephone sets are employed. For dependable, long-span, low cost rural lines, specify *Crapo* HTL-135.



HERE'S PROOF OF DEPENDABILITY

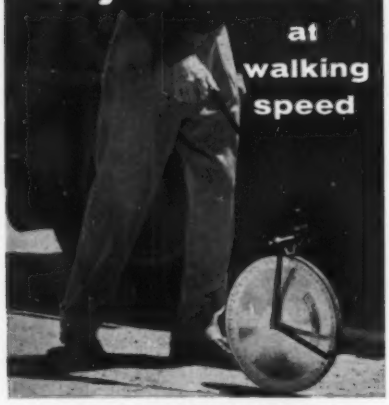
The **Crapo** HTL-135 in this typical rural line of 300-foot spans was subjected to two heavy ice storms within 14 months. This photo shows the line, without resagging, three months after the second storm.

Write for Manual TM-59 containing complete engineering data!

Crapo HTL-135

INDIANA STEEL & WIRE CO., INC.
Muncie, Indiana

Measure any distance at walking speed



records 100,000 ft. *automatically!*

It's So Easy to measure with a Rolatape ... and you save time on every estimating job... no tapes to wind, no helper is required. You get precision-accurate measurements every time.

Records Feet automatically and the accumulated total is always in full view.

Shows Inches, and Fractions of an inch. Wheel is calibrated in inches and fractions for quick easy reading.

Shows Tenths of a foot. Wheel is calibrated in tenths on reverse side for engineers.

There is a variety of Rolatape Models to suit your needs. See them at your local dealers.

Write for information and name of local dealer today!

Rolatape, Inc., 1741 14th St., Santa Monica 2, California

Rolatape

Measuring Wheels

Florida Company's Campaign Boosts Ericofon Sales

To boost extension revenues, the Winter Park (Fla.) Telephone Co. has held a campaign to increase the number of Ericofon extensions throughout their area. Sparked by top management of the Florida company, the plan was initiated with full-page ads in the Winter Park newspaper and in the area editions of the Orlando paper.

At the invitation of Winter Park management, a promotion team was sent out by the North Electric Co. to organize and conduct an integrated promotion campaign through employe sales instruction, advertising tie-ins, and window and in-store displays.

Six locations were chosen for tie-in display, including two banks, jewelry and shoe stores, a dress shop and a men's haberdashery.

Sales clinics were held in the Winter Park business office for commercial, accounting and sales personnel and in the outside plant department for the benefit of installers and road men. Blowup reprints of colorful consumer ads were mounted on all installers' trucks.

Sales presentations to both commercial and outside plant people consisted of an outline of any utility company's position in the community as a competitive unit, as much concerned with obtaining a fair share of the consumer dollar as the merchant or manufacturer.

R. J. Olmutz of North Electric, assisted by J. Trumpower of the Ohio firm's advertising department, further explained the necessity of improving a corporate utility's image in the public eye through improved public relations and positive consistent promotion.

The remainder of the sales clinics were devoted to sales and promotion techniques with special emphasis on visual sales aids for the outside plant personnel who have daily contact with the public.

Approximately 80 telephone company employes attended the series of meetings, with great enthusiasm and interest expressed throughout the promotion period. Local newspapers publicized the campaign extensively.

Results? . . . the sale of 1,000 additional Ericofons . . . two days after the kickoff date.

ITT Builds TV System To Transmit Maps for ARDC

A television system that can transmit maps, charts and pictures over long distance telephone lines was demonstrated for the first time at the Air Research & Development Command's Rome, N. Y. Air Development Center the week of Mar. 7.

The system was built by engineers of the International Telephone & Telegraph Corp. in cooperation with engineering personnel at ARDC.

A special 500-mile long-distance telephone circuit between Rome and Buffalo, N. Y., was set up for the test demonstration. Col. Joseph C. Dillow, ARDC's director of communications, guided the transmission by operating a special monitoring station. The television cameras relayed graphs giving simulated battle information between Rome and Buffalo and returned the picture to receiving consoles at the Center.

The ITT system uses Air Force security equipment to "scramble" information at the sending station and decode it before it appears on the receiving screens. In this way, classified military briefings can be conducted coast-to-coast.

An audio telephone line is used for two-way conversation describing the

North Electric Co.'s own "Charley Weaver" pitches consumer appeals during recent Winter Park, Fla., sales clinics.

...be heard there!

Noise won't bother when you telephone from a "Hear Here" Acousti-Booth. It soaks up machine, traffic and crowd noises before they interfere with clear hearing and distinct speech.

The original doorless booth . . . as always, its *acoustical performance is guaranteed;* construction, top-quality; finish, attractive.

For descriptions and prices ask for Bulletin No. A-142-4C

BURGESS-MANNING COMPANY

Architectural Products Division

749 East Park, Libertyville, Ill.

Put strength in every conversation with

CF&I Galvanized Steel Strand

Telephone lines are only as strong as the strand that supports them. For maximum service, in all climatic conditions, specify CF&I Galvanized Steel Strand. It's strong enough to hold the heaviest cable, yet pliable for easy installation. The zinc coating gives extra years of weather resistance.

CF&I Galvanized Steel Strand, available in 7 and 3-wire constructions, is made to ASTM specification A-122 when used as messenger and guy wire. Of course, CF&I manufactures strand to customers' own specifications. Your own distributor or the local CF&I sales office are ready for prompt handling of your orders. 7514

GALVANIZED STEEL STRAND

THE COLORADO FUEL AND IRON CORPORATION

CF&I STEEL

In the West: THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Farmington (N.M.) Ft. Worth • Houston • Kansas City • Lincoln • Los Angeles • Oakland Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City San Francisco • San Leandro • Seattle • Spokane • Wichita

In the East: WICKWIRE SPENCER STEEL DIVISION — Atlanta • Boston Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia

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The binder is made of durable, leather grained imitation leather over stiff boards. It would be an attractive addition to any home or library.

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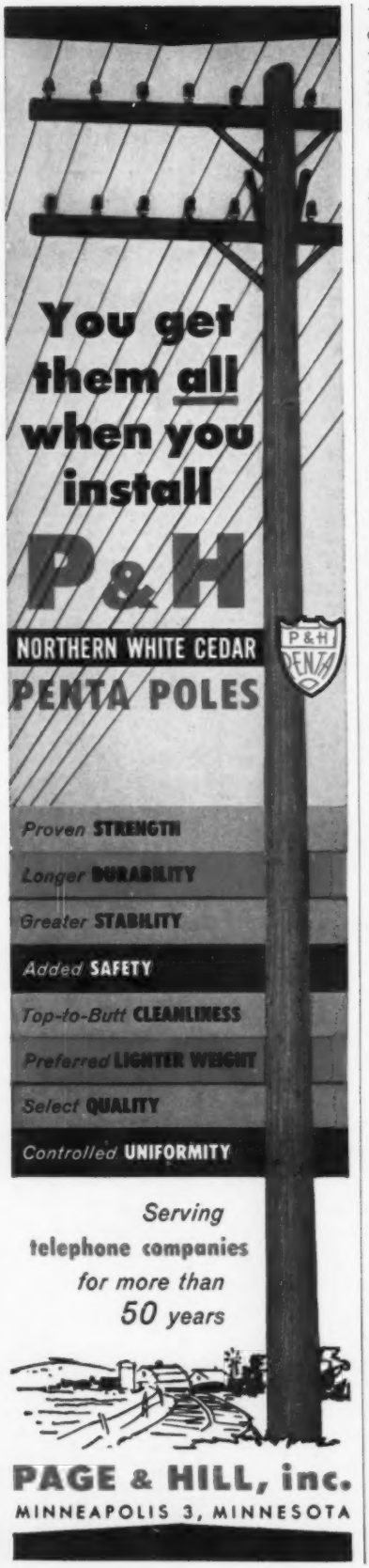


visual report. The briefer can also underline visually what he is talking about with a "real time" pointer. By manipulating a handle on the monitor console, he can point an arrow on the screen at anything he wishes to emphasize.

The TV transmission is slow scan, taking anywhere from 10 to 120 seconds a frame depending on the amount of image clarity required. Average time per frame for ordinary use is 40 seconds.

TV relay of maps, charts and pictures is limited only by the length of existing telephone lines. Information could be flashed to a receiving center in the United States, for instance, from a European location using the transatlantic cable.

A possible application of the system, according to ARDC engineers, is for use at Air Force bases where data necessary for command decisions must be assembled quickly.

A series of transmitting stations, each furnishing key information on thousands of aircraft to one center, could provide staff officers with a complete, up-to-date situation report on combat readiness.

In order to transmit the picture over telephone lines, the wide television signal is reduced to the narrower band width of telephone lines. This reduction —on the order of 1,000 to 1—is made possible through the use of "scan-conversion storage tubes" that convert signals from an industrial television camera to the narrow band capacity of commercial telephone lines. The narrow band signal is reconverted to wide band at the receiving end.

Two channels are used, one to present a set of facts or to display changing situations, and the other to "write" and store new information for transmission and presentation after the bandwidth reduction is completed.

The equipment, built by ITT Laboratories' Ft. Wayne, Ind. facility, consists of seven major units: TV camera chain; transmitter console; transmitter digital rack; transmitter briefing monitor; receiver console; receiver digital rack; and receiver audience monitor. Any number of receiving monitors may be set up at the receiving command post.

Microwave Seminars Offered By AE in Four Cities

A series of microwave radio seminars for telephone, railroad and pipeline communications engineers are now being conducted by the carrier and radio sales division of Automatic Electric Sales Corp., Northlake, Ill.

Point-to-point multi-channel operation is featured in the three-day sessions which are designed to familiarize communications specialists with the various engineering problems involved in using microwave in a communications plant.

The course curriculum contains a variety of topics—from factors affecting microwave performance, path surveys, and towers, to microwave equipment, legal requirements and application of microwave to communications plants.

Discussion on how to engineer, furnish and install systems is also included.

R. F. White, carrier and radio staff engineer, is conducting the lecture-discussion classes.

Sessions have already been held in Chicago and New York. Seminars will be held in Dallas, Mar. 22 to 24; and in Atlanta, Mar. 29 to 31; in San Francisco, Apr. 12 to 14; with a return to Chicago on Apr. 19 to 21.

Kellogg Appoints Lundvall Quality Control Manager

Daniel M. Lundvall has been appointed manager of quality control and customer service at Kellogg Switchboard & Suppy Co.

He joined Kellogg from Raytheon Mfg. Co. where, since January, 1959,

D. M. LUNDVALL

he had been quality control manager of the plant in N. Dighton, Mass.

Mr. Lundvall served the General Electric Co. from 1952 until 1959 as manager of quality control engineering. The first three of these years he spent at GE Fire Control Systems, Burlington, Vt., and the remainder at GE Missiles, Philadelphia, Pa.

Previously, he was employed by the Fairchild Engine Division as assistant plant manager at Farmingdale, N. Y.

A native of Long Island, N. Y., he was graduated from City College of New York with a bachelor of science degree.

Kingsbury Appointed As Stromberg Representative

Milo R. Kingsbury Jr. has been appointed a sales representative of Stromberg-Carlson's Telecommunication Division, according to announcement by T. C. Thompson, general sales manager.

M. R. KINGSBURY JR.

Mr. Kingsbury will serve customers in Virginia, northern Georgia and eastern Tennessee. He already has worked closely with several Independents in that region as a technical field service assistant in the Rochester office.

Previous to joining Stromberg-Carlson in 1958, Mr. Kingsbury was associated with the General Telephone Co. of Upstate New York for 14 years, and with the Inter-County Telephone Co., of Fort Myers, Fla., from 1956 to 1958.

He has had experience as a central office installation and maintenance man, as equipment supervisor, and in carrier, multiplex and other applications of electronics to the telephone industry.

Mr. Kingsbury was born in Gloversville, N. Y., and attended schools there. He is a veteran of World War II, having served with a communication section of the Army Engineers in New Guinea and the Philippines.

Since 1957, he has been a member of the Independent Telephone Pioneer Association.

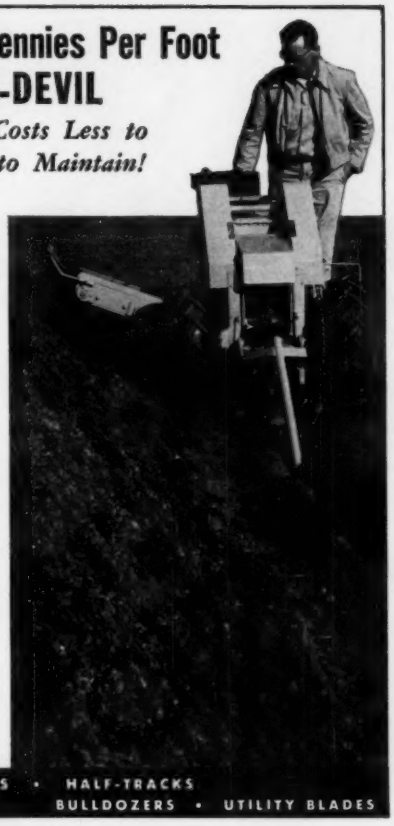
General of O. Furnishes Nike Missile Communications

General Telephone Co. of Ohio's outstanding record of supporting national defense recently was augmented when Uncle Sam's missile muscle that guards Ohio's southwestern industrial complex was linked with the operations of the North American Air Defense Command.

The headquarters of the United States Army Cincinnati Air Defense command near Wilmington, O., was the

Trenching Costs Only Pennies Per Foot
with the ARPS TRENCH-DEVIL

Costs Less to Buy! — Costs Less to Operate! — Costs Less to Maintain!



LOOK . . .

★ **Speeds** up to 1200′ per hour; depths — 1½′ through 4½′; widths — 2¾″ through 8″.

★ **Power Boom Control** permits fast raising and lowering of boom for rapid trenching; depths are accurately controlled, eliminating guesswork.

★ **Reversible Dirt Conveyor** is standard equipment — deposits dirt at selected distance from either side of trench. In only 60 seconds, conveyor may be switched from one side to the other.

★ **Easy Transporting** — under its own power, the self-propelled Model MA-2 may be run up skids, into a pickup truck, or driven at 2¾ M.P.H. One man loads — transports — unloads — trenches.

★ **Smaller Model JR** Trench-Devil digs 2¾″ or 3½″ wide, up to 20″ deep. Simple, one-man operation and fast — speeds of 15 feet per minute at a 12″ depth.

Write today for full details on both models. Dept. T.

ARPS CORPORATION NEW HOLSTEIN, WIS.

TRENCHERS • HALF-TRACKS
BULLDOZERS • UTILITY BLADES

CEECO

CEECO TYPE C125
GALVANIZED STEEL CASE ASSEMBLIES
FOR AERIAL (POLE MOUNTING).
CONTAINING FOUR TO FOUR HUNDRED SIXTY COILS.

CEECO

- **LEAD STUB ASSEMBLIES ARE PRESSURIZED, AND**
- **PLASTIC STUB ASSEMBLIES ARE SEALED IN THERMOPLASTIC COMPOUND TO INSURE PROTECTION FROM MOISTURE.**

These assemblies can be equipped with voice frequency coils, Types C632 (88 MH) and C638 (44 MH) coils are for subscriber loading, and Types C642 (88 MH) and C641 (44 MH) coils are for use on quadded inter-office and toll cables. Special coils can be made to meet other requirements.

Write us for assistance on your loading problems.

CEECO loading coils are sold by your telephone equipment supplier.

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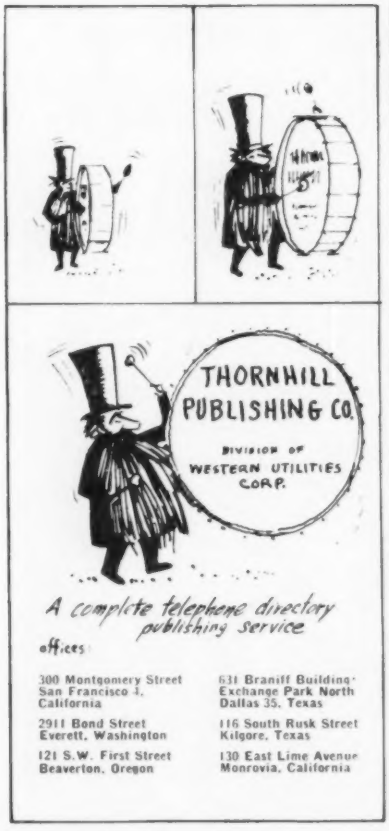

EXTRA Holding Power
QUICKLY Installed
TOUGH For long life

EVERSTICK
ANCHORS

For new construction and maintenance — Everstick Anchors speed up work and provide dependable anchorage on all types of jobs. Made of resiliant, rust resistant malleable iron. The toughest anchors made. Write for bulletin.

EVERSTICK ANCHOR CO.
FAIRFIELD, IOWA

scene of ceremonies activating the communication systems of four new Nike missile batteries located near Wilmington, Felicity and Oxford, O., and Dillsboro, Ind. All four bases are equipped to launch the Nike Ajax and the Nike Hercules missiles.

Lt. Col. Charles R. Arvin, commander of the Cincinnati Air Defense Command, 5th Missile Battalion, 56th Artillery Division, was host to some 75 guests. The visitors represented the Second United States Army, the Army Air Defense Command, the Strategic Air Command, the Office of Civil Defense, the executive and legislative branches of state and local governments, and leaders of industry and the press. Guest of honor and chief speaker was Clare E. Williams of Marion, president of General Telephone Co. of Ohio.

Lieutenant Colonel Arvin paid tribute to General Telephone for its cooperation in establishing in record time the radio and telephone systems for the Cincinnati Air Defense Area.

"In this day and age," he said, "the defense commander relies entirely on the electronic eye of radar and communication systems to flash instant warnings and orders. Gone are the days of couriers, dispatches, maps and reconnaissance; time is of such importance that information must be received, evaluated, and disseminated at once."

He continued, saying that "with our radar screen stretching from the Arctic Circle down to every defense post, we have our eyes. With the radio-telephone equipment installed and maintained by General Telephone Co. of Ohio, we have the ability to receive and transmit intelligence and orders instantly throughout the North American Air Defense. Thus, we are capable of engaging in an air defense battle within minutes after a warning."

In briefing his guests on the operations of the base, Colonel Arvin told the group that no aggressor could get within 500 miles of this area without being seen on the radar screen—and subsequently "killed" by a Nike missile.

Upwards of 600 officers and enlisted men operate the command post near Wilmington and the four Nike batteries that make up the defense system. The entire internal and external communications system which is comprised of open circuit telephone and radio was installed and will be maintained by General of Ohio.

The guest speaker, Mr. Williams, president of General Telephone Co. of Ohio, emphasized that "every American adult, civilian or military, should have a direct interest in and should support local and national defenses. This Nike system is a protector of the homefront

Cutting communication facilities into service for the Nike command post at Wilmington, O., are (from left) Lt. Col. Charles R. Arvin, chief of Cincinnati Defense Area Command; Rankin Gibson, assistant to Ohio's Governor Michael V. DiSalle; Col. Murray Bywater, division commander of Clinton County Air Force Base; William Oertel, executive director of Ohio Newspaper Association; Bates Harcum, mayor of Wilmington, and Clare E. Williams, president of General Telephone Co. of Ohio. General installed and will maintain radio and telephone communications for four Nike missile sites and the system's battalion headquarters.

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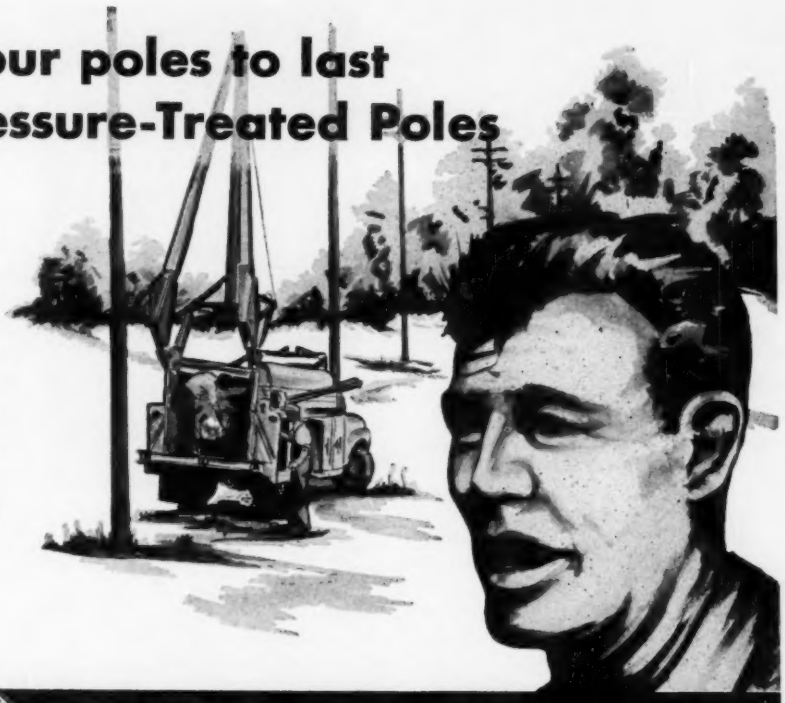

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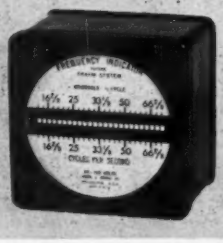

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and is an asset to the southwestern Ohio area."

"The local Nike base," he continued, "plus the expansion of the Clinton County Air Force Base, will virtually double this community's population by year's end. And, it will drastically change Wilmington's complexion. . . .

"It is the immediate responsibility of the community and its leaders, to adapt the city to this mushrooming growth. From our side, the utilities field is increasing its construction program to meet this challenge."

IT&T Appoints Childers to Personnel, Information Post

Don D. Childers has joined the New York staff of the International Telephone & Telegraph Corp. telecommunications operating group as administrator—personnel and public information, it was announced on Mar. 1 by John T. Naylor, ITT vice president and group executive of the operating companies.

Mr. Childers will be responsible for assisting the 12 radio and telephone subsidiaries of ITT in personnel administration, in developing training material and programs and in the coordination of public information activities. He will also be in direct charge of office and clerical administration in the New York headquarters.

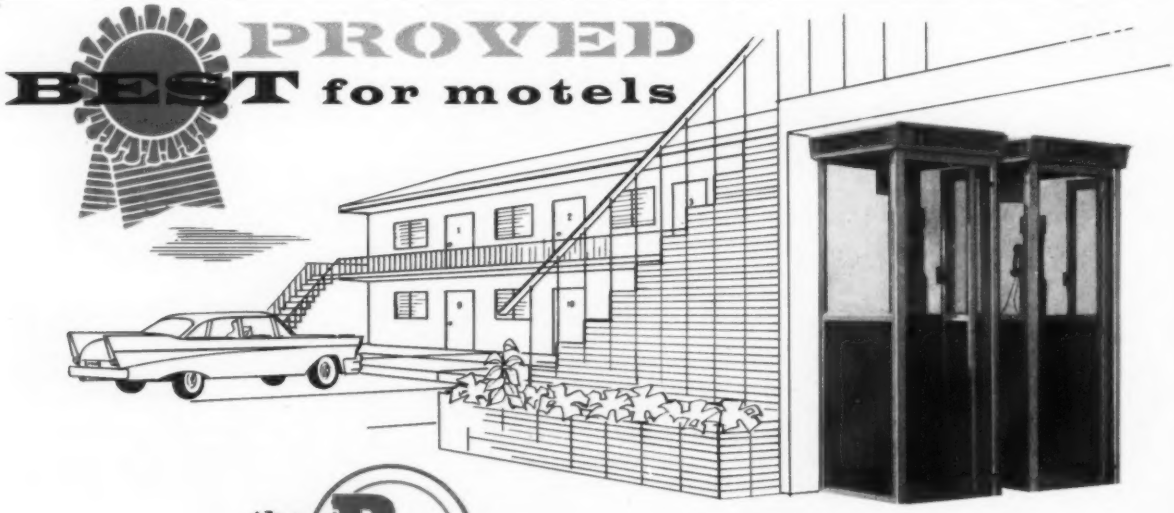
D. D. CHILDERS

Mr. Childers joins the ITT System after 14 years in the telephone industry, having served in traffic, commercial, accounting and general administrative capacities with United Utilities, Inc., and affiliated companies in Kansas City, Mo., and the Pacific Northwest. After serving with the U. S. Navy he became a member of the staff of the Washington State Department of Public Service in 1946. He has been active in telephone association affairs, serving on various committees and programs, including those of the United States Independent Telephone Association. He is past president of the Washington Independent Telephone Association.

Cavanagh Product Manager For Copperweld Steel

F. E. Leib, vice president in charge of the Wire and Cable Division of the Copperweld Steel Co., announces the promotion of Gordon Cavanagh to the position of product manager for Alumo-

GORDON CAVANAGH



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weld, the company's new aluminum-covered steel wire and strand.

Mr. Cavanagh will continue to be located at the division's headquarters at Glassport, Pa., where he was development engineer.

Prior to moving to Glassport he was a sales engineer for Copperweld, covering the states of Indiana and Michigan.

He received his B. S. degree in electrical engineering from Washington University, St. Louis, Mo.,

Mr. Cavanagh was employed by electric utilities in Illinois, Missouri, and Iowa before joining Copperweld in 1952.

In his new position, he will be responsible for the co-ordination of the Alumoweld activities in the various departments of the Wire and Cable Division.

Elect L. H. Warner To General T&E Board

Leslie H. Warner on Mar. 3 was elected to the board of directors of General Telephone & Electronics Corp. Mr. Warner is executive vice president of General Telephone & Electronics Corp. in charge of manufacturing operations.

L. H. WARNER

Mr. Warner started his career in the telephone industry in 1929 with the Long Lines Department of the American Telephone & Telegraph Co. He joined Automatic Electric Co. in June, 1937, and has been associated with the manufacturing and sales subsidiaries of the corporation ever since. During the course of his career, he has served as president of several of the principal manufacturing companies in the General System including Automatic Electric Co. and Leich Electric Co.

Stromberg Names Confeld Telecommunications Analyst

James D. Confeld has been appointed product analyst in Stromberg-Carlson's Telecommunication Division, according to an announcement by Charles F. Cheney, manager of marketing research in the division.

In this position Mr. Confeld will be responsible for evaluation of the engineering, manufacturing and marketing capabilities of the Telecommunication Division with regard to new products and advancements in present product lines, and he will serve as coordinator for the introduction of new products.

Prior to this assignment, Mr. Confeld was a staff engineer in the systems planning group, and he previously had been senior toll ticketing engineer.

He joined Stromberg-Carlson in 1944 after receiving a degree in electrical engineering at Michigan College of Mining and Technology. In addition to his positions in the engineering department, he also has served as a member of the research staff, as a field service engineer, and as an engineer in charge of sales proposals.

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Cascade Pole Co., P.O. Box 743, Tacoma, Wash. — Creosoted Douglas Fir and Cedar Poles.

C. M. Christiansen Co. — Northern White Cedar Poles, Pentachlorophenol treated. Plant and Yards, Phelps, Wis.

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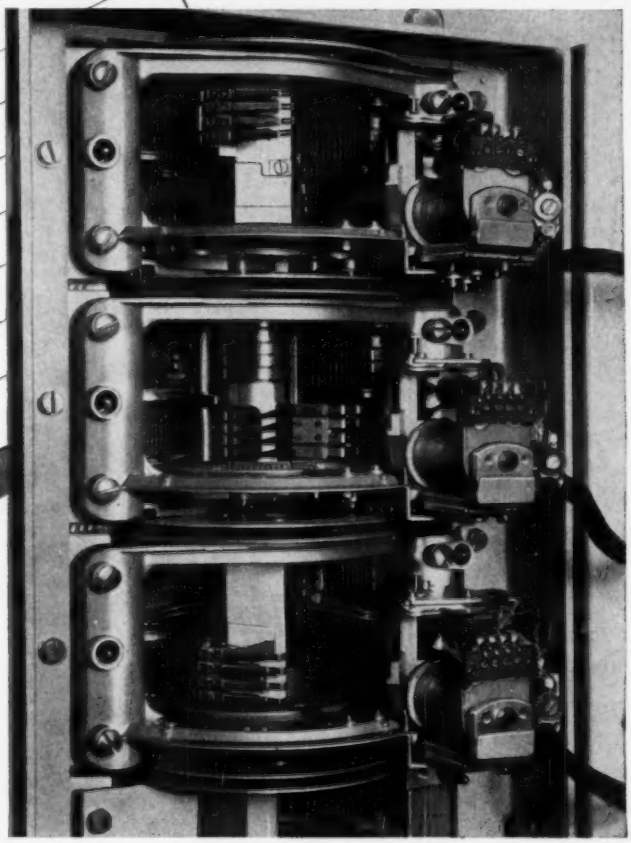

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